Canadian Directory of Aquatic Toxicologists and Related Specialists

First Edition

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March 1985

Répertoire canadien des toxicologues du milieu aquatique et des spécialistes de disciplines connexes

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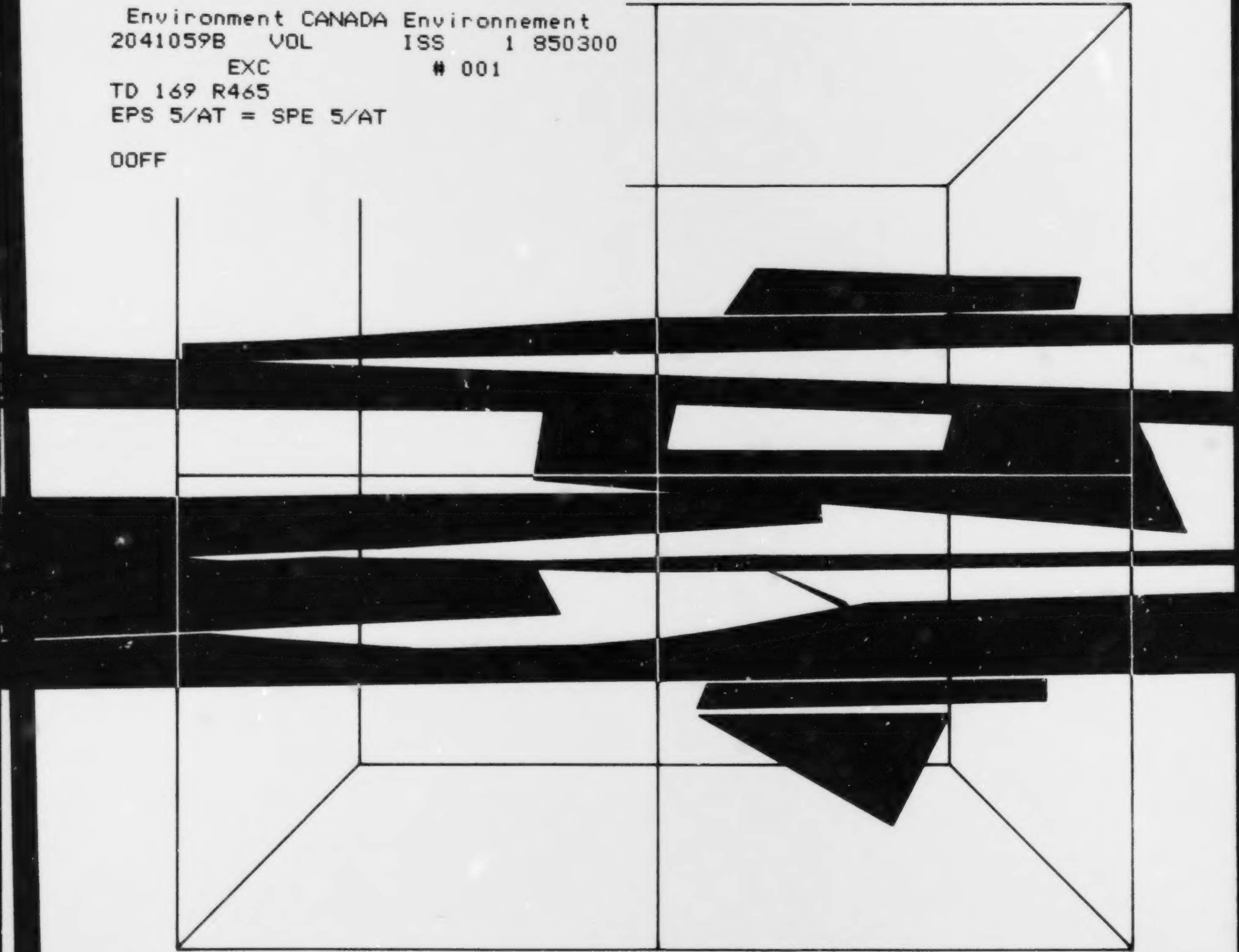

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CANADIAN DIRECTORY OF AQUATIC TOXICOLOGISTS AND RELATED SPECIALISTS

First Edition

P.G. Wells
Toxic Chemicals Management Program
Environmental Protection Service
Environment Canada

and

R.C. Belore and E.L. Belore
Woodlawn, Ontario

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March 1985

RÉPERTOIRE CANADIEN DES TOXICOLOGUES DU MILIEU AQUATIQUE ET DES SPÉCIALISTES DE DISCIPLINES CONNEXES

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PREFACE

This is the first edition of the "Canadian Directory of Aquatic Toxicologists and Related Specialists." It is a product of the Tenth Annual Aquatic Toxicity Workshop, held in Halifax in November 1983. It is based, in part, on the format of other surveys at earlier Aquatic Toxicity Workshops.

The directory lists workers in the field who submitted the survey form for the Halifax Workshop, or who returned the form by May 1984. Most of the 328 entries are Canadian, with some from the United States, Europe and Japan.

The directory's prime objective is to identify active workers in basic and applied aquatic toxicology and related disciplines, primarily in Canada, for the benefit of those workers and all persons working in the environmental field. The directory is computerized, facilitating periodic updating and revision. It is meant to be complementary to Environment Canada's "Directory of Canadian Environmental Experts" (Departmental Library, Environment Canada).

The directory has three sections: (1) INDEXES, (2) RECORDS OF WORKERS, and (3) SURVEY SHEETS. The INDEXES include an alphabetical listing of all worker's names, locations, toxicity tests or approaches used, toxicants, organisms and response parameters. Numbers beside each name or key word in an index refer to the record number assigned to the pertinent worker. The RECORDS OF WORKERS contain all information submitted by each person, with the exception of lists of publications. These should be checked carefully by individuals whose records are already in the directory. The SURVEY SHEETS should be completed by any worker requiring a corrected or updated record, or new persons wishing to be included in the next edition. The survey sheets may be completed in either English or French, or both, depending on the language that is to be used for the entry.

The directory is meant to be of assistance to persons working in aquatic and environmental toxicology, and to persons in environmental management positions requiring knowledge of specialists and their work. Any comments on its usefulness, completeness, accuracy and future improvements would be greatly appreciated.

Peter G. Wells
August 1984

AVANT-PROPOS

Voici la première édition du *Répertoire canadien des toxicologues du milieu aquatique et des spécialistes de disciplines connexes*. Produit à la suite du Dixième Atelier annuel sur la toxicité en milieu aquatique, il suit en partie la présentation adoptée pour d'autres enquêtes effectuées à l'occasion d'ateliers précédents.

Figurent dans le présent répertoire les noms des 328 personnes qui ont remplis leur questionnaire pour l'atelier d'Halifax ou qui l'ont retourné avant mai 1984. Ce sont pour la plupart des Canadiens, mais il y a aussi quelques Américains, Européens et Japonais.

Le Répertoire est destiné principalement aux personnes travaillant dans le domaine de l'environnement qui peuvent parfois avoir besoin de connaître des spécialistes effectuant des recherches fondamentales ou appliquées en hydrotoxicologie ou dans des disciplines connexes, spécialement au Canada. Il est informatisé, ce qui en facilitera la mise à jour et la révision périodiques. Il se veut un complément au *Répertoire des spécialistes canadiens de l'environnement* d'Environnement Canada (Bibliothèque ministérielle, Environnement Canada).

Le répertoire comprend trois parties: la première renferme les index, la deuxième réunit les articles consacrés à chaque spécialiste, et la troisième contient les questionnaires. Les index incluent les noms des personnes inscrites, leurs lieux de travail, les types d'essais de toxicité, et (ou) les méthodes employés, les substances toxiques d'intérêt, les organismes étudiés et les paramètres mesurés. Les chiffres à côté de chaque mot clé renvoient aux numéros de dossier des personnes inscrites. Les articles sur chaque spécialiste renferment tous les renseignements fournis par l'intéressé, exception faite des listes des publications. Les spécialistes qui figurent dans le répertoire devront examiner attentivement ces dernières. Les questionnaires de la troisième partie doivent être remplis par tous ceux qui veulent faire corriger ou mettre à jour les renseignements à leur sujet ou qui souhaitent être inscrits dans la prochaine édition. Les questionnaires peuvent être remplis en anglais ou en français (ou les deux) dépendant de la langue que l'on préfère pour la prochaine édition.

Le répertoire devrait être utile aux personnes travaillant en écotoxicologie ou en gestion de l'environnement qui ont besoin de connaître des spécialistes dans le domaine et leurs travaux. Tout commentaire sur l'exactitude et l'utilité du questionnaire ainsi que toute suggestion ou nouvelle information sont les bienvenues.

Peter G. Wells
Août 1984

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This project was supported by the Toxic Chemicals Management Program, Priority Issues Directorate, Environment Canada, Ottawa, Ontario, and the Marine Ecology Laboratory, Fisheries and Oceans Canada, Bedford Institute of Oceanography, Dartmouth, Nova Scotia. The National Steering Committee of the Aquatic Toxicity Workshop is thanked for its enthusiastic support.

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RECORDS OF WORKERS

RÉPERTOIRE DES SPÉCIALISTES

Name: Acott, G. 1

Cardinal River Coals Ltd.
Bag Service 2570
Hinton, Alberta
T0E 1B0

Phone: 403-692-3763

Work Description: Collection and clarification of coal mine wastewater for removal of high levels of suspended sediment. Addition of polyelectrolytic flocculants to increase settling.

Tests Used: N/A

Toxicants: Suspended solids, pH, iron, NO_3, PO_4, Al, Zn, Mn, heavy metals

Organisms: N/A

Response Parameters: N/A

Name: Aleksiuk, Michael Dr. 2

Environmental Affairs
Syncrude Canada Ltd.
10030-107 Street
Edmonton, Alberta
T5J 3E5

Phone: 403-429-9379

Work Description: Detoxification of oil sands tailings water

Tests Used: Microtox®, acute, chronic

Toxicants: Oil sands tailings water

Organisms: Various

Response Parameters: Various responses

Name: Anderson, Jack W. 3

Battelle Northwest, MRL
439 W. Sequim Bay Road
Sequim, Washington 98382
U.S.A.

Phone: 206-683-4151

Work Description: Field and laboratory studies on the fate and effects of oil or chemically dispersed oil.

Tests Used: Flowing lab exposures, field exposures with sediments

Toxicants: PAH, oil, dispersed oil

Organisms: *Macoma*, *Protothaca*, bivalves, shrimp, sand lance (*Ammodytes*), amphipods, worms

Response Parameters: LC50, toxicity index, growth, condition index, glycogen, bioaccumulation

Name: Anderson, Perry D. 4

Concordia University
Dept. of Biology
1455 DeMaisonneuve Blvd., West
Quebec
H3G IM8

Phone: 514-879-7357

Work Description: Multiple toxicity; potentiation; toxicity extrapolations based on surrogate models.

Tests Used: Acute, subacute, chronic

Toxicants: Inorganics, organics, combined, various compounds

Organisms: Fish

Response Parameters: Survival, reproduction, development, growth, physiological systems, behaviour

---

Name: Anton, Susan 5

Merck, Sharp & Dohme Research Laboratory
P.O. Box 2000, RSOD-202
Rohway, N.J. 07065
U.S.A.

Phone: 210-574-7287

Work Description: Aquatic toxicity studies on industrial wastewaters using *Daphnia sp.* and algal species.

Tests Used: LC50, EC50, MATC, algal assay bottle test

Toxicants: Industrial wastewater

Organisms: *Daphnia magna*, *Daphnia pulex*

Response Parameters: Mortality, growth, reproduction

Name: Arnac, Michel 6

Université du Québec
Dept. D' Oceanographie
300 Avenue des Ursulines
Rimouski, Quebec
G5L 3A1

Phone: 418-724-1754

Work Description: Investigation on the use of heavy metal accumulation profiles in the assessment of the discreteness of Atlantic Herring spawning in spring and fall in the St. Lawrence Estuary.

Tests Used: N/A

Toxicants: Heavy metals (Cd, Cu, Pb, Zn)

Organisms: Marine organisms in the St. Lawrence Estuary, fish, lobster, crab

Response Parameters: Heavy metal accumulation

Name: Baker, Bruce L. 7

Kananaskis Centre
University of Calgary
2500 University Drive, N.W.
Calgary, Alberta
T2N 1N4

Phone: 403-284-6124

Work Description: Environmental and toxic hazard of landfill leachates both in the landfill and during migration away from the landfill. Environmental hazard resulting from accidental spills of hazardous liquids on soils and the attenuation potential of those soils.

Tests Used: Microtox, acute

Toxicants: Landfill leachates

Organisms: Microtox - bacteria

Response Parameters: Bioluminescence

Name: Baker, Dr. Mark D. 8

Department of Medical Genetics
Medical Sciences Building
University of Toronto
Toronto, Ontario
M5S 1A8

Phone: 416-978-4120

Work Description: Microbial uptake, degradation and metabolism of organic and inorganic (heavy metals and metalloids) toxicants, effects of toxic compounds on cellular growth, physiology and biochemistry, genetic applications to microbial metabolism of toxic compounds.

Tests Used: Sublethal, acute

Toxicants: Heavy metals, metalloids, organic compounds

Organisms: Bacteria, algae, mammalian cell lines

Response Parameters: Physiological and biochemical effects, genetic effects

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Name: Ballantyne, James 9

Huntsman Marine Laboratory
St. Andrews, New Brunswick
E0G 2X0

Phone: 506-529-8854

Work Description: The determination of the effects of a variety of toxicants on mitochondria isolated from marine invertebrates.

Tests Used: In vivo and in vitro effects on mitochondria, acute

Toxicants: Cu^{++}, pesticides, heavy metals

Organisms: Marine invertebrates

Response Parameters: Mitochondrial respiratory control ratio

Name: Beamish, F.W.H. 10

University of Guelph
Dept. of Zoology
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Sublethal effects of xenobiotics on fish.

Tests Used: Acute, chronic

Toxicants: Heavy metals, pesticides

Organisms: Fish

Response Parameters: Energetics, metabolism, blood constituents, swimming

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Name: Beckett, Arthur 11

Aquatic Toxicology Laboratory
14317-128th Avenue
Edmonton, Alberta
T5L 3H3

Phone: 403-420-2610

Work Description: We are using and developing a variety of ecotoxicity screening tests to aid in the characterization of industrial/municipal effluents for priority and other chemical pollutants.

Tests Used: Standardized screening-type tests, acute

Toxicants: Industrial effluents, municipal effluents, commercial chemicals

Organisms: *Salmo gairdneri*, *Daphnia pulex*, *Daphnia magna*, *Selenastrum capricornutum*, *Gasterosteus aculeatus*, *Nyabalthica*

Response Parameters: Acute chronic and sublethal tests using lethality, inhibition of movement, growth supression, bioaccumulation, behaviour

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Name: Berger, Jacques Dr. 12

University of Toronto
Dept. of Zoology
Toronto, Ontario
M5S 1A1

Phone: 416-978-3521

Work Description: The ecotoxicology of crude oil, bacteria, and protozoa. The kinetics of petroleum hydrocarbons among eucaryotic micro-organisms. Ultrastructural studies on oil stress.

Tests Used: Acute, chronic (sublethal)

Toxicants: Petroleum hydrocarbons, oils

Organisms: Ciliate protozoa, amoebae, rotifers

Response Parameters: Growth (numerical) responses, ultrastructural responses

Name: Bermingham, N. 13

EPS, Environment Canada
1001 Pierre Dupuy
Longueuil, Quebec
J4K 1A1

Phone: 514-651-6860

Work Description: Development of toxicity bioassays for ecotoxicological assessment of wastewasters using laboratory test organisms.

Tests Used: Lethal, sublethal, bioaccumulation, genotoxicity

Toxicants: Effluents, leachates, sediments

Organisms: Rainbow trout, green algae (*S. capricornutum*), Microtox®, *Salmonella*

Response Parameters: LC50, LT50, ATP (stress test), EC50 (ATP and cell counts), bioaccumulation, EC50, mutagenicity

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Name: Bernhart, Alfred P. Dr. 14

23 Cheritan Avenue
Toronto, Ontario
M4R 1S3

Phone: 416-488-3626

Work Description: Uptake of nutrients and toxins by vegetation (from water and air).

Tests Used: N/A

Toxicants: N/A

Organisms: Micro-organisms, vegetation

Response Parameters: Toxicity thresholds

Name: Betts, J.L. 15

Chief, Renewable Resources Extraction
and Processing Division
Industrial Programs Branch,
Environmental Protection Service
Environment Canada
Ottawa, Ontario
K1A 1C8

Phone: 613-997-3060

Work Description: Contract on pulp and paper effluent toxicity (jointly with Canadian Pulp and Paper Association and Fisheries and Oceans Canada).

Tests Used: Acute, lethal

Toxicants: Effluents

Organisms: Fish

Response Parameters: N/A

Name: Bharath, Ainsley 16

Lakehead University
Chemistry Dept.
Oliver Road
Thunder Bay, Ontario
P7B 5E1

Phone: 870-345-2121

Work Description: Aquatic toxicity of organics utilizing flow-through system (freshwater), analysis of water and tissue by G.C.

Tests Used: 96-h acute, ELS chronic, bioaccumulation, chronic

Toxicants: Chlorinated benzenes, chlorinated phenols

Organisms: American flagfish, brook trout

Response Parameters: Egg hatchability, survival, growth, reproduction

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Name: Billeck, Brian N. 17

Freshwater Institute
501 University Crescent
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5084

Work Description: Oil and Oil/dispersant toxicology, pesticide toxicology, bioconcentration, fish life histories.

Tests Used: Sublethal

Toxicants: Oils, dispersants, pesticides

Organisms: Fish (eggs, larvae, adults), duckweed

Response Parameters: Biochemical responses, growth, death, narcosis

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Name: Birtwell, Ian K. 18

Dept. Fisheries and Oceans
West Vancouver Laboratory
4160 Marine Drive
West Vancouver, British Columbia
V7V 1N6

Phone: 604-926-2618

Work Description: Effects of municipal waste upon juvenile chinook salmon. Feeding strategies of fish in intertidal area receiving municipal waste.

Tests Used: Lethal, sublethal

Toxicants: Treatment plant water, ambient river water

Organisms: Chinook salmon, juvenile salmon, flatfish

Response Parameters: Growth (+-exercise), survival, condition, contaminant uptake/partitioning, disease susceptibility, saltwater accommodation

Name: Blaise, Christian 19

EPS, Environment Canada
1001 Pierre Dupuy
Longueuil, Quebec
J4K 1A1

Phone: 514-651-6860

Work Description: Development of relative toxicity bioassays for ecotoxicological assessment of wastewaters using laboratory test organisms.

Tests Used: Lethal, sublethal, bioaccumulation, genotoxicity

Toxicants: Effluents, leachates, sediments

Organisms: Rainbow trout, green algae (*S. capricornutum*), Microtox®, *Salmonella*

Response Parameters: LC50, LT50, ATP (stress test), EC50 (ATP and cell counts), bioaccumulation, EC50 mutagenicity

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Name: Bodammer, Joel Dr. 20

National Marine Fish Service
Northeast Fisheries Center
Oxford Laboratory
Oxford, Maryland 21654
U.S.A.

Phone: 301-226-5193

Work Description: Ultrastructural studies on the olfactory and visual systems of larval fish exposed to copper. "The Cytopathological Effect of Copper on the Olfactory Organs of Larval Fish (*P. americanus* and *M. aeglefinus*)" *Int. Counc. Explor. Sea* CM1981/E:46,13 p.

Tests Used: Acute, static bioassays

Toxicants: Copper, heavy metals

Organisms: Marine fish larvae

Response Parameters: Ultrastructural and light microscopic cytopathology

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Name: Boerger, Hans 21

Syncrude Canada Ltd.
Environmental Affairs
10030-107 Street
Edmonton, Alberta
T5J 3E5

Phone: 403-429-9372

Work Description: Detoxification of tailings water resulting from oil sands extraction and upgrading processes.

Tests Used: Acute, chronic, Microtox®, multispecies

Toxicants: Oil sands tailings water

Organisms: Bacteria (microtox), fish, trout, fathead minnow, invertebrates, multispecies tests

Response Parameters: Microtox, reduction in light production, survival, growth, reproduction, emergence (insects)

Name: Bogaert, Thierry 22

University of Manitoba
Dept. of Zoology
Winnipeg, Manitoba
R3T 2N2

Bioquest International Inc.
7 Loyola Bay
Winnipeg, Manitoba
R3T 3J7

Phone: 204-474-9821

Work Description: Nematodes (*Panagrellus redivivus*) test (mutagenesis, developmental inhibition, mortality in environmental samples, UFFI, fish tissues). Similar test using marine nematodes (*Monhystera*). A mutagenesis assay with polychaetes.

Tests Used: Acute mortality, mutagenesis, development tests, acute

Toxicants: Pure chemicals

Organisms: Nematodes, Polychaetes

Response Parameters: Mutagenicity/genotoxicity, sublethal effects (blocks at moulting), mortality

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Name: Bolger, Patrick M. 23

INCO Ltd.
Safety and Environmental Control Dept.
Copper Cliff, Ontario
P0M 1N0

Phone: 705-682-8248

Work Description: Surveys of streams and lakes affected by mining effluents. Work includes collection of benthic invertebrates, phytoplankton, zooplankton.

Tests Used: Static, 96-h, acute toxicity tests, acute

Toxicants: Mining effluents

Organisms: Rainbow trout, benthic invertebrates, phytoplankton, zooplankton

Response Parameters: Lethality (for rainbow trout toxicity tests), presence/absence and diversity (of organisms in the field studies)

Name: Bonaventura, J. & C. Drs. 24

Co-Directors, Marine Biomedical Center
Duke University Marine Laboratory
Pivers Island
Beaufort, NC 28516
U.S.A.

Phone: 919-728-2111

Work Description: Heavy metal toxicity especially as related to the interaction of metal ions with respiratory proteins (oxygen binding proteins as well as electron transport proteins).

Tests Used: Acute, biochemical tests

Toxicants: Heavy metals

Organisms: Marine invertebrates, horseshoe crab (*Limulus polyphemus*), blue crab (*Callinectes sapidus*), terebellid worm(*Amphitrite ornata*)

Response Parameters: Biochemical (interaction with respiratory proteins)

25

Name: Bradley, Richard W.

Dept. of Zoology
University of Guelph
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Effect of pH, hardness, and alkalinity on acute toxicity of zinc to fish. Effect of pH and hardness on zinc accumulation byfish. Acclimation of fish to zinc.

Tests Used: Acute, chronic

Toxicants: Zinc, heavy metals

Organisms: Rainbow trout (*Salmo gairdneri*)

Response Parameters: Mortality, zinc residues, levels of metallothionein-like protein

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Name: Braune, Birgit M.

Dept. of Zoology
University of Guelph
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Mercury, cadmium and lead in Bay of Fundy food chain, with special reference to marine mammals, seabirds, and suspended sediment.

Tests Used: N/A

Toxicants: Mercury, cadmium, lead, heavy metals

Organisms: Marine mammals, seabirds

Response Parameters: Residue levels, bioaccumulation

27

Name: Brinkhurst, R.O.

Institute of Ocean Sciences
P.O. Box 6000
Sidney, British Columbia
V8L 4B2

Phone: 604-656-8345

Work Description: Toxicology and ecology/systematics of marine and freshwater oligochaetes.

Tests Used: LC50, acute, lethality

Toxicants: Various compounds

Organisms: Tubificidae

Response Parameters: Respiration, mortality

Name: Brown, W.F.M. 28

MacKenzie & Brown Inc.
Environmental Engineers
533 Arbor Road
Mississauga, Ontario
L5G 2J6

Phone: 416-278-8848

Work Description: Pesticide chemistry (see Chemistry in Canada, June 1983).

Tests Used: N/A

Toxicants: Pesticides

Organisms: Insects

Response Parameters: N/A

Name: Buckley, Lawrence Dr. 29

National Marine Fisheries Service
South Ferry Road
Narrangansett, Rhode Island 02882
U.S.A.

Phone: 401-789-9326

Work Description: Determination of factors affecting growth and survival of larval fish, effect of contaminants on early life history stages of fish.

Tests Used: Acute, chronic

Toxicants: N/A

Organisms: Marine fish larvae, *Paralichthys dentatus, Pseudopleuronectes americanus, Gadus morhua, Morone saxatilis, Ammodytes sp.*

Response Parameters: Survival, growth, RNA/DNA, nucleotide profile

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Name: Burrell, Robert E. Dr. 30

6-403 Keats Way
Waterloo, Ontario
N2L 5S7

Phone: 519-884-7591

Work Description: Interactions of solvents and pesticides with single and multiple populations of microorganisms.

Tests Used: Acute, sublethal, short-term

Toxicants: Organo antimonies, organo bismuth, benomyl captan, Na-PCP, atrazine

Organisms: Fungi (Filamentous), algae (green), bacteria

Response Parameters: Population numbers, radial growth (fungi), biomass

Name: Burridge, Les 31

Department of Fisheries and Oceans
Biological Station
St. Andrews, New Brunswick
E0G 2X0

Phone: 506-529-8854

Work Description: Toxicity of organic pollutants to juvenile Atlantic salmon. Bioaccumulation of organochlorines by *Nereis virens*, bioaccumulation of PAH by four marine invertebrates.

Tests Used: Acute, static, flow-through

Toxicants: Pesticides, phenol, PAH, PCB

Organisms: Atlantic salmon, polychaetes, molluscs (bivalves), crustaceans

Response Parameters: Death, bioaccumulation

Name: Burton, Ian 32

Institute for Environmental Studies
University of Toronto
Toronto, Ontario
M5S 1A4

Phone: 416-978-5341

Work Description: Risk assessment and risk perception. Current work: The transport of dangerous goods by rail in Toronto for the R.T.C. Risks of offshore oil exploration for the Ocean Ranger Commission.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Cairnie, Alan B. 33

Science Advisor's Office
Environment Canada
Ottawa, Ontario
K1A 0H3

Phone: 819-997-2393

Work Description: Environmental science policy and related matters, including toxicology centres.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Cairns, John 34

Centre for Environmental Studies
Virginia Polytechnic Institute
and State University
Blacksburg, Virginia 24601
U.S.A.

Phone: 703-961-5538

Work Description: Multispecies toxicity testing, hazard evaluation of chemicals, restoration of damaged ecosystems.

Tests Used: Multispecies

Toxicants: Various compounds

Organisms: Various

Response Parameters: Various responses

Name: Calabrese, Anthony Dr. 35

National Marine Fisheries Service
212 Rogers Avenue
Milford, Connecticut 06460
U.S.A.

Phone: 203-783-4205

Work Description: Physiological studies of the effects of metals on molluscs, crustaceans, finfish held in long-term exposure systems.

Tests Used: 96-h, acute, long-term sublethal

Toxicants: Heavy metals

Organisms: Molluscs, crustaceans, finfish

Response Parameters: Survival, growth, metabolism, reproduction

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Name: Campbell, Peter G.C. 36

Université du Québec
INRS-Eau
C.P. 7500
Ste-Foy, Québec
G1V 4C7

Phone: 418-657-2560

Work Description: Trace metal-plankton interactions (*J. Phycol. 18*:521-9 (1982) *Can. J. Fish. Aq. Sci. 40*:895-904 (1983)), bio-availability of sediment-bound metals to benthic organisms (*Heavy Metals in the Environ.*, Heidelberg, pp. 1086-89, 1983).

Tests Used: Sublethal

Toxicants: Heavy metals (Cu, Zn)

Organisms: Algae (*Chlamydomonas variabilis*), lake phytoplankton, macrophytes, freshwater molluscs

Response Parameters: Growth, metal bioaccumulation

Name: Cantelmo-Cristini, A. Dr. **37**

Ramapo College of New Jersey
505 Ramapo Valley Road
Mahwah, New Jersey 07430
U.S.A.

Phone: 201-825-2800

Work Description: Long-term sublethal exposure of juvenile *Callinectes sapidus* to hydrocarbons in the laboratory. Field study of juvenile *C. sapidus* caged in the Hudson Estuary. Field study of three species of molluscs caged in the Raritan River and Estuary.

Tests Used: Chronic, sublethal exposure and *in situ* studies

Toxicants: Benzene, DMN, WSF of No. 2 Fuel Oil , petroleum hydrocarbons

Organisms: *Callinectes sapidus, Corbicula flumenia, Goniobasis virginica, Macoma balthica, Palaeomonetes pugio*

Response Parameters: Adenylate energy charge, biochemical parameters, growth studies including limb regeneration

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Name: Capuzzo, Judith M. **38**

Woods Hole Oceanographic Institution
Biology Department
Woods Hole, MA 02543
U.S.A.

Phone: 617-548-1400

Work Description: Investigating physiological and biochemical effects of petroleum hydrocarbons on marine plankton, more general interests on the effects of lipophilic organic contaminants on plankton energetics.

Tests Used: Continuous flow bioassays, acute

Toxicants: Oils, PCBs, pyrethroid pesticides

Organisms: Larvae of *Homarus americanus*, zooplankton, copepods, *Acartia tonsa*, *Pseudocalanus* sp.

Response Parameters: Survival, respiration, growth, egg production, lipid metabolism, energetics, molting

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Name: Carlisle, David B. **39**

Inland Waters Directorate
Environment Canada
Ottawa, Ontario
K1A 0E7

Phone: 819-997-3822

Work Description: Theoretical and modelling - water quality.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Carls, Mark G. 40

NOAA/NMFS
Auke Bay Laboratory
P.O. Box 210155
Auke Bay, ALASKA 99801
U.S.A.

Phone: 907-789-0947

Work Description: Research biology, specializing in petroleum hydrocarbon toxicity and larval invertebrates and larval fish, also drilling mud toxicity.

Tests Used: Acute, sublethal

Toxicants: Petroleum hydrocarbons, drilling muds, oils

Organisms: Larval fish - herring, cod, pollock, mackerel; larval crustaceans - king, tanner, and dungeness crab; pink, kelp, dock, and coonstripe shrimp

Response Parameters: Fertilization success, development rates, mortalities, timing of hatching, hatching success, morphological abnormalities, lengths and weights

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Name: Cary, George A. 41

Petrolite Corporation
369 Marshall Avenue
Saint Louis, Missouri 63119
U.S.A.

Phone: 314-968-6068

Work Description: Ecological effects of oil field additives.

Tests Used: Acute, drilling mud bioassays

Toxicants: Biocides, water treatment polymers, demulsifiers

Organisms: Fathead minnow, *Daphnia* spp., stickleback, sheepshead minnow, grass shrimp, Mysid shrimp

Response Parameters: Lethality

Name: Chacko, V.T. 42

Environment Canada
Water Quality Branch
Freshwater Institute
501 University Cr.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5035

Work Description: Resource Officer in charge of monitoring and assessing biocides and nutrients in water and sediment. (e.g., Nutrient quality of Manitoba rivers at 24 interjurisdictional sites and Sourio River nutrient characterization during a low flow year).

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Chapman, Peter M. Dr. 43

E.V.S. Consultants Ltd.
195 Pemberton Avenue
North Vancouver, British Columbia
V7P 2R4

Phone: 604-986-4331

Work Description: Sediment toxicity tests (lethal, sublethal and cellular). Publications recently in Water Research, Aquatic Toxicology, ASTM, Int rev. ges. Hydrobiol, etc.

Tests Used: Lethal, sublethal, cellular

Toxicants: Sediments

Organisms: Fish, invertebrates

Response Parameters: Death, behavior, growth, reproduction, mitotic abnormalities

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Name: Chau, Y.K. Dr. 44

National Water Research Institute
Canada Centre for Inland Waters
P.O. Box 5050
Burlington, Ontario
L7R 4A6

Phone: 416-637-4707

Work Description: Chemical and biological methylation of metals in aquatic environments, toxicity of organometals and metals to algae, metal speciation, metals and organics interaction.

Tests Used: Algal toxicity, acute

Toxicants: Organometals, metals, etc.

Organisms: Freshwater algae

Response Parameters: Primary productivity using C14 technique

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Name: Cheng, Sam K. 45

Aquatic Toxicology Laboratory
14317-128th Avenue
Edmonton, Alberta
T5L 3H3

Phone: 403-420-2610

Work Description: Acute toxicity studies on oil spill dispersants using rainbow trout, *Daphnia* and green algae.

Tests Used: 96-h acute, static

Toxicants: Norman Wells crude, dispersants

Organisms: *Salmo gairdneri, Daphnia magna, Selanastrum capricornutum*

Response Parameters: Mortality, immobility, growth, inhibition

Name: **Chou, C.L.** 46

Dept. of Fisheries and Oceans
Fisheries Research Branch
Halifax Laboratory
P.O. Box 550
Halifax, Nova Scotia
B3J 2S7

Phone: 902-426-6277

Work Description: Heavy metal, interaction, metal speciation, pollution monitoring studies, time trend monitoring and MLR statistical model studies.

Tests Used: Monitoring studies

Toxicants: Heavy metals

Organisms: Marine fish, shellfish, lobster, scallop, mussel, oyster

Response Parameters: Residues of metals, bioaccumulation

Name: **Cleland, Glenn** 47

McMaster University
Dept. of Biology
Hamilton, Ontario
L8S 4K1

Phone: 416-525-9140

Work Description: Effect of halogenated aromatic hydrocarbons on the immune response.

Tests Used: Immunotoxicology, acute

Toxicants: Organochlorines

Organisms: Rainbow trout, mice, rats

Response Parameters: Humoral immunity, cellular immunity, host resistance

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Name: **Conover, Shirley A.M. Dr.** 48

Hardy Associates (1978) Ltd.
900 Windmill Road
Dartmouth, Nova Scotia
B3B 1P7

Phone: 902-463-2486

Work Description: Oil spill contingency plans, EIS's including biological impact prediction, monitoring programs, field studies. A user of toxicity information rather than a producer.

Tests Used: *In situ*

Toxicants: Hydrocarbons, drilling muds, oil, bacterial, microbial

Organisms: N/A

Response Parameters: N/A

Name: Côté, Raymond P. 49

Institute for Resource and Environmental Studies
Dalhousie University
Halifax, Nova Scotia

Phone: 902-424-3632

Work Description: Environmental toxicology programs and lecturer (management of toxic chemicals).

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Couture, Pierre 50

Université du Québec
INRS-Eau
C.P. 7500
Sainte-Foy, Québec
G1V 4C7

Phone: 418-872-0840

Work Description: Use of biochemical parameters for the assessment of toxicological and ecotoxicological impact.

Tests Used: Batch, sublethal, chronic

Toxicants: Inorganic, dissolved organic matter

Organisms: Algae, *Selenastrum capricornutum*, natural community of algae

Response Parameters: Biochemical parameters: AMP, ADP, ATP, fluorescence, C-14, chlorophyll

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Name: Craig, Gordon R. 51

IEC BEAK Consultants
6870 Goreway Drive
Mississauga, Ontario
L4V 1P1

Phone: 416-671-2600

Work Description: Industrial effluent toxicity testing. Broad Sector Assessments (pulp and paper, mining, chemical manufacturing). Toxicant Identification and Characterization.

Tests Used: Static, flow-through, *in situ*

Toxicants: NH_3, phenol, Cu, industrial effluents, heavy metals

Organisms: Rainbow trout, tropical fish, *Daphnia*, algae, lake trout, brook trout

Response Parameters: Lethality, reproduction, embryo-larval tests, growth, pathology

Name: Croteau, Gerard 52

Environnement Québec
Service de la Qualité des eaux
2360 Ch. Ste-Foy
Ste-Foy, Québec
G1V 4H2

Phone: 418-643-4425

Work Description: Environmental monitoring of toxic substances in water and sediments in rivers and lakes of the Province of Quebec.

Tests Used: Monitoring

Toxicants: Various, 15 heavy metals, 10 pesticides, BPC, cyanides, arsenic

Organisms: Aquatic plants, molluscs, fishes

Response Parameters: Residue levels, bioaccumulation

Name: Danell, Robert W. 53

Freshwater Institute
Fisheries and Oceans Canada
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5084

Work Description: Methodology for accurate lethal and sublethal tests using highly volatile compounds -- crude oil, oil and gas water soluble fraction, flow-through and static bioassays, oil tainting of fish.

Tests Used: Lethal, sublethal, static, flow-through bioassays

Toxicants: Crude oil, oil products, pesticides, hydrocarbons

Organisms: Rainbow trout, whitefish, walleye, duckweed (*Lemna minor*)

Response Parameters: Death, unconsciousness, bioaccumulation, tainting, growth

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Name: Davies, Ronald W. 54

Dept. of Biology
University of Calgary
2500 University Drive, N.W.
Calgary, Alberta
T2N 1N4

Phone: 403-284-5260

Work Description: The effects of perturbations on lotic and lentic macroinvertebrate populations.

Tests Used: Bioassays and stress analysis

Toxicants: Chlorine, pH

Organisms: Macroinvertebrates

Response Parameters: Respiratory oxygen consumption, mortality

Name: Day, James H. Dr. 55

Kingston General Hospital
Division of Allergy & Immunology
Kingston, Ontario
K7L 2V4

Phone: 613-546-4646

Work Description: Medical considerations with toxic chemicals.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Day, Kristin E. 56

University of Guelph
Dept. of Environmental Biology
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Ph.D thesis in progress -- Sublethal effects of fenvalerate (insecticide) on zooplankton in lab and field studies.

Tests Used: Sublethal

Toxicants: Pesticides

Organisms: *Daphnia* spp., *Diaptomus oregonensis*, *Ceriodaphnia* spp.

Response Parameters: Filtering activity, behavior

Name: Daye, Peter G. Dr. 57

Daye Atlantic Salmon Corporation
P.O. Box 1081
Armdale, Nova Scotia
B3L 4L5

Phone: 902-434-9611

Work Description: Effects of pollutants on fish. Acid rain investigations. Effects of heavy metals in acidified waters on salmonids.

Tests Used: Short-term, long-term (3 years)

Toxicants: pH, cadmium, aluminum, lead, heavy metals

Organisms: Fish, Atlantic salmon, brook trout, white perch

Response Parameters: LC50, LL50, osmoregulation, bioaccumulations of Cd, Al, Pb, histology, locomotor behavior, upper lethal temperatures, gonadal development

Name: de March, B.G.E. 58

Freshwater Institute
501 University Cres.
Department of Fisheries and Oceans
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5213

Work Description: Behavioural assays with oil-dispersant mixtures. Examination of models for joint effects of toxicants in bioassays. Various projects on statistics in toxicology.

Tests Used: Acute, lethal, behavioral

Toxicants: Heavy metals, metal cations, oil-dispersant mixtures

Organisms: *Gammarus lacustris*

Response Parameters: Lethality, preference - avoidance

Name: Denizeau, Francine 59

Université du Québec à Montréal
Dept. de Chimie
Succ. A C.P. 8888
Montréal, Québec
H3C 3P8

Phone: 514-282-8229

Work Description: Emploi de cellules en culture pour la evaluation des effets cytotoxiques et genotoxiques des contaminants aquatiques.

Tests Used: Cytotoxicity, genotoxicity

Toxicants: Pb, Cd, PCB, Chrysatile asbestos fibers, heavy metals

Organisms: Rainbow trout, human skin epithelial cells, human liver cells

Response Parameters: Cell growth, protein, DNA and RNA synthesis, DNA repair synthesis (unscheduled DNA synthesis (UDS))

Name: Dey, Arun 60

Fisheries and Oceans Canada
Fisheries Research Branch
P.O. Box 5667
St. John's, Newfoundland
A1C 5X1

Phone: 709-772-4703

Work Description: Effects of carbonate type pesticide on freshwater and marine fish: hepatic enzymes, protein synthesis and cytochromes. Effects of crude petroleum on marine fish: lipids and fatty acids, hepatic and non-hepatic cytochromes.

Tests Used: Chronic tests

Toxicants: Matacil, crude oil, petroleum hydrocarbons

Organisms: Freshwater fish, marine fish

Response Parameters: N/A

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Name: Dickman, Mike

Brock University
Biological Sciences Dept.
St. Catharines, Ontario
L2S 3A1

Phone: 416-688-5550

Work Description: Analysis of the impact of 2, 4-D on a pond ecosystem, phytoplankton and periphyton community. This study was co-ordinated by Dr. Brian Scott of Environment Canada.

Tests Used: Community structure

Toxicants: 2,4-D

Organisms: Phytoplankton communities, periphyton communities

Response Parameters: Significant differences between control ponds and treated ponds

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62

Name: Dickson, Gary W.

CIBA-GEIGY Corporation
Agricultural Division
P.O. Box 18300
Greensboro, NC 27419
U.S.A.

Phone: 919-292-7100

Work Description: Title: Senior Environmental Specialist (Technical Contract Management and Data Evaluation). Involved in evaluation of aquatic fate, as well as aquatic toxicity of newly developed pesticides.

Tests Used: Acute, subchronic, chronic

Toxicants: Agricultural chemicals

Organisms: Bluegill, rainbow trout, sheepshead and fathead minnows, *Daphnia* spp., Mysid shrimp, amphipods, algal species

Response Parameters: Mortality, growth, reproduction, bioconcentration

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63

Name: Dinnel, Paul A.

Fisheries Research Institute WH-10
University of Washington
Seattle, Washington 98195
U.S.A.

Phone: 206-543-7345

Work Description: Marine ecology and toxicology.

Tests Used: Sperm, embryo, larval, fish and invertebrates, acute

Toxicants: Metals, pesticides, sewage, chlorine, sediments

Organisms: Sea urchins, sand dollars, oysters, mussels, crabs, shrimp, larval and adult marine fishes, salmon, amphipods

Response Parameters: Mortality, embryo development, egg fertilization success, behavior

Name: Dixon, George D. 64

University of Waterloo
Dept. of Biology
Waterloo, Ontario
N2L 3G1

Phone: 519-885-1211

Work Description: Diet as a modifying factor of toxicant response, development of clinical tests to assess toxicity.

Tests Used: Acute, chronic

Toxicants: Heavy metals, phenolics, chlorobenzenes

Organisms: Rainbow trout (*Salmo gairdneri*)

Response Parameters: Mortality, growth, histopathology, biochemical parameters in blood and liver tissue

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Name: Doe, K.G. 65

Environment Canada, EPS
3rd Floor
45 Alderney Drive
Dartmouth, Nova Scotia
B2Y 2N6

Phone: 902-426-3284

Work Description: Acute lethal toxicity tests on petroleum and petroleum products, oil-based drilling fluids and insecticides using fish and aquatic invertebrates.

Tests Used: Static, flow-through, acute, lethal toxicity tests

Toxicants: Petroleum, drilling fluids, pesticides

Organisms: *Salmo gairdneri, Daphnia pulex, Daphnia magna, Gasterosteus aculeatus, Mytilus edulis, Homarus americanus*

Response Parameters: Death, immobility, inhibition of byssal generation in mussels

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Name: Duncan, D.A. 66

Freshwater Institute
Fisheries and Oceans Canada
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5084

Work Description: Oil/dispersant mixtures: toxicity tests using larval rainbow trout. ("Tolerance and Resistance to Cadmium in White Suckers (*Catostomus commersoni*) Previously Exposed to Cd, Hg, Zn, or Se," *Can. J. Fish. Aquat. Sci.* 40:128-138, 1983).

Tests Used: Chronic (60-day), sublethal (4-day), acute (4-day)

Toxicants: Crude oil, oil dispersants, heavy metals

Organisms: Rainbow trout, white suckers

Response Parameters: Growth, deformities, death, acclimation, enzyme induction, metallothionein induction

Name: Dutka, Bernard J. **67**

Head, Microbiology Lab
Canada Centre for Inland Waters
P.O. Box 5050
867 Lakeshore Road
Burlington, Ontario
L7R 4A6

Phone: 416-637-4286

Work Description: Methods assessment for microbial screening of toxicants. Presently evaluating oxygen probe techniques. Organizing Microbial Toxicity Assessment Symposium. New journal on microbial testing - Liu and Dutka editors.

Tests Used: Microbial, acute testing

Toxicants: Single chemicals, chemical mixtures, water samples

Organisms: Microtox, *Spirillum volutans*, *Pseudomonas fluorescens*, mixed bacterial cultures

Response Parameters: Luminescence inhibition, oxygen uptake, growth inhibition, motility inhibition

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Name: Dwivedi, O.P. Prof. **68**

University of Guelph
Dept. of Political Studies
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description Government regulation of toxic effluents - federal and provincial (Ontario) government involvements. Managing Ontario's Hazardous Wastes: A Review of Legal and Administrative Mechanisms.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Eidt, Douglas C. Ph.D **69**

Maritimes Forest Research Centre
P.O. Box 4000
Fredericton, New Brunswick
E0H 1N0

Phone: 506-452-3551

Work Description: Impact of forest insecticides on aquatic organisms. Partitioning of insecticides in stream ecosystem. Impact of forest clearcutting on stream invertebrates.

Tests Used: Field experiments, acute

Toxicants: Aminocarb, fenitrothion, siltation

Organisms: Aquatic insects

Response Parameters: Drift, emergence, populations, diversity

Name: Engelhardt, F.R. Dr. 70

Canada Oil and Gas Lands Administration
355 River Road, 16th Floor
Ottawa, Ontario
K1A 0E4

Phone: 613-993-3760

Work Description: Research studies on physiological responses to toxicants, with emphasis on ion balance and endocrine mechanisms. Management of environmental toxicity studies.

Tests Used: Physiological, clinical, acute

Toxicants: Petroleum hydrocarbons, heavy metals

Organisms: Benthic invertebrates, fish

Response Parameters: Salt and water balance, steroid hormones, morphological changes (histopathology)

Name: Erickson, Dennis 71

Enviro-Test Laboratories
P.O. Box 128
Nisku, Alberta
T0C 2G0

Phone: 403-955-7660

Work Description: Trace organic analysis of pesticides, PCB, EPA priority pollutant organics, general toxic organics, using GC, LC and GC/MS.

Tests Used: N/A

Toxicants: Pesticides, organics

Organisms: N/A

Response Parameters: N/A

Name: Fairchild, Wayne L. 72

c/o Doug Eidt, M.F.R.C.
Environment Canada
P.O. Box 4000
Fredericton, New Brunswick
E3B 5P7

Phone: 506-452-3551

Work Description: Effects of forest spraying on the invertebrate fauna of small bog ponds.

Tests Used: Impact assessment - ecological

Toxicants: Pesticides

Organisms: Insects, invertebrates, freshwater biota

Response Parameters: N/A

Name: **Farmer, G.J.** 73

Department of Fisheries and Oceans
P.O. Box 550
Halifax, Nova Scotia
B3J 2S7

Phone: 902-426-7819

Work Description: Effects of acid water on the parr-smolt transformation of Atlantic salmon.

Tests Used: 4 months duration, chronic

Toxicants: H_2SO_4, acids

Organisms: Atlantic salmon (*Salmo salar*)

Response Parameters: Mortality, condition factor, lipid and moisture content, plasma and urine osmolality, plasma chloride, sodium, protein and water content

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Name: **Feng, Sung Dr.** 74

University of Connecticut
Marine Research Laboratory
Noank, Connecticut 06340
U.S.A.

Phone: 203-536-4233

Work Description: Monitoring of possible toxic effects associated with the disposal of dredge spoil in Long Island Sound by using mussels (*Mytilus edulis*) deployed on or near the disposal site.

Tests Used: Field test

Toxicants: Trace metals, PCBs

Organisms: *Mytilus edulis*

Response Parameters: Histopathology, changes in wet/dry weight ratios, lipids, carbohydrates, proteins, mortalities

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Name: **Fisher, Jim** 75

Weyerhaeuser Company
WTC-1B22
Tacoma, WA 98477
U.S.A.

Phone: 206-924-6825

Work Description: Over the past several years, we have been conducting studies with various fish species to determine responses (both acute, chronic, and subacute) to pulp mill effluents (treated and untreated) from various pulping processes.

Tests Used: 96-h, acute, chronic toxicity

Toxicants: Pulp mill effluents, wood preservatives

Organisms: Cold and warmwater fish species (primarily freshwater)

Response Parameters: Acute toxicity (mortality), avoidance/preference, Leucocrit (blood chemistry), growth, egg morphology, behavior

Name: Forlin, Lars 76

Dept. of Zoophysiology
University of Gothenburg
Box 25059, S-400 31 Gothenburg
Sweden

Phone: (0)31-853676

Work Description: Biotransformation of xenobiotics and sublethal physiological effects of pollutants in fish.

Tests Used: Physiological, biochemical and chemical, lab vs. field

Toxicants: Chlorinated compounds in pulp and paper mill effluents

Organisms: Rainbow trout, perch, fourhorn sculpin

Response Parameters: Phase I and II xenobiotic biotransformation enzymes (cytochrome P-450, UDP glucuronyl transferase, GSH S-tarnsferase)

Name: Fox, Glen A. 77

Canadian Wildlife Service
Wildlife Toxicology Section
National Wildlife Research Centre
Ottawa, Ontario
K1A 0E7

Phone: 819-997-1410

Work Description: Working on biochemical monitors of pollutant toxicity in fish-eating birds in the Great Lakes.

Tests Used: Natural exposure

Toxicants: Great Lakes environment, ambient water

Organisms: Herring gulls, other birds

Response Parameters: Blood chemistry, thyroid function tests, MFO activities, metallothionine levels

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Name: Francis, Paul C. Dr. 78

Lilly Research Laboratories
P.O. Box 708
Greenfield, Indiana 46140
U.S.A.

Phone: 317-467-4121

Work Description: Aquatic hazard assessment for agricultural chemicals and biomonitoring of industrial effluents.

Tests Used: Acute static, static-renewal, chronic flow-through

Toxicants: Herbicides, insecticides, growth regulators, plant effluents

Organisms: Trout, bluegill, catfish, *Daphnia*, *Hexagenia*, algae (*Selenastrum*), duckweek (*Lemna*), earthworm (*Lumbricus terrestris*)

Response Parameters: Mortality, behavior, activity, growth, reproduction, vertebral column lesions

Name: **Freeman, Harry C.** 79

Halifax Lab
Dept. of Fisheries and Oceans
1707 Lower Water Street
Halifax, Nova Scotia
B3J 2S7

Phone: 902-426-6281

Work Description: Determining sublethal effects of pollutants on steroidogenesis and reproduction in fish.

Tests Used: Biochemical

Toxicants: Various compounds

Organisms: Marine fish, particularly cod

Response Parameters: Reproduction, endocrine systems

Name: **Friesen, M.K.** 80

Freshwater Institute
Fisheries and Oceans
501 University Crescent
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5139

Work Description: Determination of distribution life histories and secondary production of macrobenthic species in Lake Dauphin, Manitoba. This lake, selected for a walleye enhancement project, receives agricultural chemical and sediment input.

Tests Used: N/A

Toxicants: Agricultural chemicals, sediment

Organisms: Fingernail clams (Pisidiidae), chironomids (Chironomidae), snails (Gastropoda), mayflies (Ephemeroptera)

Response Parameters: Species indicators, distribution, production, life history

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Name: **Galloway, M.M. Dr.** 81

Canada Biting Fly Centre
University of Manitoba
Winnipeg, Manitoba
R3T 2N2

Phone: 204-474-9440

Work Description: Biology and control of mosquitoes, blackflies and other biting flies, evaluation of efficiency and environmental impact of control agents including larvicides applied to aquatic habitats.

Tests Used: Laboratory bioassays, field evaluations

Toxicants: Larvicides

Organisms: Aquatic insects - target and non-target species

Response Parameters: Mortality

Name: Ganczarczyk, J. Prof. **82**

University of Toronto
Dept. of Civil Engineering
Toronto, Ontario
M5S 1A4

Phone: 416-978-3141

Work Description: Activated sludge treatment of industrial effluents and nitrification process.

Tests Used: Adaptation of bacteria

Toxicants: Phenols, pH, free ammonia, organics

Organisms: Heterotrophic and autotrophic bacteria

Response Parameters: N/A

Name: Gaskin, David E. **83**

University of Guelph
Dept. of Zoology
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Mercury, cadmium and lead in Bay of Fundy food chain, with special reference to marine mammals, seabirds, and suspended sediment.

Tests Used: N/A

Toxicants: Mercury, cadmium, lead, heavy metals

Organisms: Marine mammals, seabirds

Response Parameters: Residue levels, bioaccumulation

Name: Geen, Glen H. **84**

Simon Fraser University
Dept. of Biological Sciences
Burnaby, British Columbia
V5A 1S6

Phone: 604-291-3536

Work Description: Sublethal concentrations of toxicants - effects on respiration, uptake and elimination.

Tests Used: Acute, lethal, sublethal

Toxicants: Pesticides, hydrocarbons, pH, heavy metals

Organisms: Salmonids

Response Parameters: Respiration, residues, LC50s, bioaccumulation

Name: Gilbertson, Michael 85

Dept. of Fisheries and Oceans
240 Sparks Street
Ottawa, Ontario
K1A 0E6

Phone: 613-995-4010

Work Description: Negotiations on regulations under the Fisheries Act. Contaminants evaluation under Environmental Contaminants Act. Program Management. Continuity Chairman, Aquatic Toxicity Workshop.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Gilgan, Michael W. 86

Regional Inspection & Technology Lab, DFO
P.O. Box 550
1721 Lower Water Street
Halifax, Nova Scotia
B3J 2S7

Phone: 902-426-6284

Work Description: Histamine accumulation in susceptible fish, microcontaminants of fish products (PCB - pesticides, some metallics).

Tests Used: N/A

Toxicants: PCB's, pesticides, metals

Organisms: All commercial fish

Response Parameters: Histamine accumulation, residues, bioaccumulation

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Name: Golebiowski, Walter 87

Aquatic Toxicology Laboratory
14317-128 Avenue
Edmonton, Alberta
T5L 3H3

Phone: 403-420-2610

Work Description: Aquatic toxicity testing (bioassays) involving several aquatic (freshwater and marine) species and a battery of acute lethality and sublethal tests, as well as other related ecotoxicological activities.

Tests Used: 96-h LC50, static, acute lethality, bioaccumulation

Toxicants: Industrial effluents, landfill leachates

Organisms: *Salmo gairdneri, Daphnia magna, Selenastrum capricornutum, Gasterosteus aculeatus*

Response Parameters: Acute lethality, immobilization (*Daphnia*), reproductive inhibition (algae), bioaccumulation

Name: Goran, Dave 88

Department of Zoophysiology
Box 250 59
400 31 Goteborg
Sweden

Phone: 31-853677

Work Description: Dose-response relationships at sublethal concentrations and doses, pH-interaction with metals.

Tests Used: Acute, embryo-larval, chronic

Toxicants: Metals, effluents, organics

Organisms: *Daphnia*, zebrafish, rainbow trout

Response Parameters: Physiological, biochemical, hematological, behavioral

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Name: Gordon, Robert W. 89

International Pacific
Salmon Fisheries Commission
Sweltzer Creek Lab
Cultus Lake, British Columbia
V0X 1H0

Phone: 604-858-4612

Work Description: Treatability of thermal mechanical pulping (TMP) effluent in bench scale treatment units and identification of toxic constituents in TMP effluent.

Tests Used: Short-term, acute, static bioassays

Toxicants: TMP effluent, resin acids, fatty acids

Organisms: *Oncorhynchus nerka*, *Daphnia*

Response Parameters: Mortality

Name: Goudey, Stephen J. Dr. 90

304-340 Woodbridge Way
Sherwood Park, Alberta
T8A 4G3

Phone: 403-464-6306

Work Description: Biological monitoring of potentially toxic substances and other pollutants discharged into lakes and rivers.

Tests Used: Cage cultures

Toxicants: Various compounds

Organisms: Filamentous algae (cultured isolutes and indigenous populations)

Response Parameters: Chemical composition (C, N, P levels), wet, dry and ash weights, pigments

Name: Gould, Edith 91

NOAA National Marine Fisheries Service, NEFC Milford Lab
212 Rogers Avenue
Milford, Connecticut 06460
U.S.A.

Phone: 203-783-4222

Work Description: Biochemical effects of pollutant stress in marine animals. Field monitoring, both offshore and estuarine. Laboratory chronic exposures of marine animals to sub-acute concentrations of heavy metals.

Tests Used: Chronic, 1 and 2 month exposures, flowing seawater, depuration

Toxicants: Heavy metals, Cd, Cu, Pb, Hg

Organisms: *Placopecten magellanicus, Pseudopleuronectes americanus, Homarus americanus*

Response Parameters: Activities of enzymes involved in energy mobilization and expenditure, biosynthesis, redox balance, glycogen reserves

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Name: Goulet, Michel 92

Service de la qualite des eaux
Ministere de l'Environnement du Québec
2360 chemin Ste-Foy
Ste-Foy, Québec
G1V 4H2

Phone: 418-643-4425

Work Description: Monitoring network on toxic substances in Quebec aquatic environment (biological and non-biological). Water quality monitoring network in Quebec's Rivers.

Tests Used: Analysis of toxic substances, bioassay in water and sediments

Toxicants: Organics, inorganics

Organisms: Fish, aquatic plants, molluscs

Response Parameters: N/A

Name: Gray, Robert H. 93

Battelle Pacific Northwest Laboratories
P.O. Box 999
Richland, WA 99352
U.S.A.

Phone: 509-375-2937

Work Description: Toxicological effects and environmental fate of chemically complex organic mixtures with emphasis on synthetic fuels.

Tests Used: *In vitro, in vivo*, acute, chronic, behavioral assays

Toxicants: Complex organic mixtures, various compounds

Organisms: Bacteria, algae, *Daphnia*, chironomids, fish (various species), barley, mammalian cells, rodents

Response Parameters: Mutation, cellular transformation, mortality, growth, reproduction, avoidance, skin tumors, teratogenicity, population responses

Name: **Grover, R.** 94

Agriculture Canada
Research Station
Box 440
Regina, Saskatchewan
S4P 3A2

Phone: 306-585-0255

Work Description: Monitoring off-target transport and residues of herbicides in the environment (air and water).

Tests Used: N/A

Toxicants: Herbicides, monitoring residues

Organisms: N/A

Response Parameters: N/A

Name: **Gruber, David Dr.** 95

Biological Monitoring Inc.
P.O. Box 184
Blacksburg, VA 24060
U.S.A.

Phone: 703-953-2821

Work Description: Automated and continuous on-line biomonitoring (fish ventilatory behavior), toxicity testing, field surveys, environmental impact statements, dilutors, groundwater monitoring programs.

Tests Used: Acute, chronic, static, continuous flow, on-site (mobile lab), bioaccumulation

Toxicants: Industrial effluents, drinking water, pure chemicals

Organisms: *Daphnia pulex*, *Daphnia magna*, *Ceriodaphnia*, Mysid shrimp, various invertebrates, various fish

Response Parameters: Behavior, death, reproductive impairment, growth, diversity and indicator organisms

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Name: **Guiney, Patrick D.** 96

United States Steel Corporation
Environmental Health Services
600 Grant Street
Pittsburgh, PA 15238
U.S.A.

Phone: 412-433-6869

Work Description: General environmental hazard assessment, comparative toxicology and metabolism, biomonitoring methods development, groundwater monitoring, fate and effects of complex mixtures.

Tests Used: *In situ*, flow-through, static renewal, acute, chronic, bioconcentration

Toxicants: Industrial specialty and commodity chemicals petroleum hydrocarbons, waste streams

Organisms: Various freshwater fish and aquatic invertebrates

Response Parameters: Lethality, fecundity, growth and development, biochemical physiology, behaviour, diversity

Name: Hadjinicolaou, John Dr.

97

McGill University
Dept. of Civil Engineering
817 Sherbrooke W.
Montreal, Quebec
H3A 2K6

Phone: 514-392-5382

Work Description: Development of a new avoidance apparatus. Relating engineering parameters with toxicity tests.

Tests Used: Preference - avoidance, acute

Toxicants: DSS, polymers, monomers, industrial effluents

Organisms: Rainbow trout

Response Parameters: Abundance, lateral, horizontal and vertical distribution

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Name: Hallett, Douglas J.

98

Environment Canada
Regional Director General's Office
55 St. Clair Avenue, East
7th Floor
Toronto, Ontario
M4T 1M2

Phone: 416-966-6406

Work Description: Chairman - Great Lakes Toxic Chemicals Program.

Tests Used: N/A

Toxicants: Organics, inorganics

Organisms: Freshwater organisms, wildlife, mammals

Response Parameters: N/A

Name: Hamaker, Timothy L.

99

1716 Heath Parkway
Ft. Collins, CO 80521
U.S.A.

Phone: 303-493-8878

Work Description: Early life stage, embryo larval fish chronics, *Daphnia* chronics, *Ceriodaphnia* chronics, effluent screening, bioaccumulation.

Tests Used: Acute, chronic, bioaccumulation

Toxicants: Various compounds

Organisms: Fatheads, *Daphnia*, *Ceriodaphnia*, rainbow trout, bluegills, *Chironomids*

Response Parameters: Death, sublethal, growth, hatching success, reduced reproductivity

Name: Hamelink, Jerry Dr. 100

Lilly Research Laboratories
P.O. Box 708
Greenfield, IN 46140
U.S.A.

Phone: 317-467-4589

Work Description: Assessing the environmental risk/safety of our agricultural chemical products or the waste products from our worldwide manufacturing facilities.

Tests Used: Aquatic or avian, acute, chronic tests

Toxicants: Agricultural chemicals

Organisms: Fish, invertebrates, algae, macrophytes

Response Parameters: Various responses

Name: Hammond, B.R. Dr. 101

Alberta Environment
Research Management Division
10405 Jasper Avenue
Edmonton, Alberta
T5J 3N4

Phone: 403-427-6254

Work Description: Senior Research Manager of Aquatic Research.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Hara, Toshiaki J. 102

Freshwater Institute
Fisheries and Oceans
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5010

Work Description: Physiological, biochemical, morphological and behavioral studies on chemoreception in aquatic organisms, its application to fishing and aquaculture, and its interactions with toxic chemicals and acid precipitation in the aquatic environment.

Tests Used: Sublethal

Toxicants: Heavy metals, acid precipitation

Organisms: Salmonid fishes

Response Parameters: Electrophysiological, biochemical, morphological, behavioral responses

Name: Harrison, Scott

103

Freshwater Institute
Dept. of Fisheries and Oceans
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5005

Work Description: Currently investigating the preference/avoidance response of lake whitefish to sediment. Also, effect of 14-day exposure to acid pH on locomotor activity of lake whitefish.

Tests Used: Behavioral, preference/avoidance, locomotor activity, acute

Toxicants: Sediment, acid pH

Organisms: Lake whitefish (*Coregonus clupeaformis*)

Response Parameters: Preference or avoidance, changes in amplitude, pattern of locomotor activity, behavior

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Name: Hart, Donald R.

104

IEC BEAK Environmental Consultants Ltd.
6870 Goreway Drive
Mississauga, Ontario
L4V 1P1

Phone: 416-671-2600

Work Description: Development of an amphibian mutagen test system which uncovers induced recessive lethal mutations in androgenetic haploid embryos.

Tests Used: Mutagenicity, teratogenicity

Toxicants: EMS, ENU, DEN, gamma radiation

Organisms: Aquatic frogs, *Xenopus laevis*

Response Parameters: Induced dominant lethals, recessive lethals or embryonic abnormalities, reproduction, genetics

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Name: Havas, Magda

105

Institute for Environmental Studies
University of Toronto
Toronto, Ontario
M5S 1A1

Phone: 416-978-7358

Work Description: Studying the effect of aluminum on aquatic invertebrates at different pHs and calcium concentrations.

Tests Used: Bioassays

Toxicants: pH, Al, metals

Organisms: *Daphnia magna, Daphnia catawba, Chironomus anthrocinus, Chaoborus* spp.

Response Parameters: Mortality, sodium regulation, ATPase activity, Al accumulation

106

Name: Haya, Katsuji

Fisheries and Oceans
Biological Station
St. Andrews, New Brunswick
E0G 2X0

Phone: 506-529-8854

Work Description: Development of biochemical indices of sublethal effects caused by xenobiotics in aquatic organisms.

Tests Used: Acute, sublethal

Toxicants: Zn^{++}, acid pH, organochlorine pesticides, heavy metals

Organisms: *Nereis virens, Salmo salar, Homarus americanus*

Response Parameters: Energy metabolism, chorionase, ATPase

107

Name: Haywood, Geoffrey P. Dr.

Dobrocky Seatech Ltd.
9865 West Saanich Road
P.O. Box 6500
Sidney, British Columbia
V8L 4M7

Phone: 604-656-0111

Work Description: Aquatic 96-h LC50 bioassays, heavy metals bioaccumulation and chronic toxicity studies. Oyster embryo bioassays for marine water quality assessments.

Tests Used: Bioassays, bioaccumulation

Toxicants: Zn^{++}, acid pH, organochlorines, pesticides

Organisms: Freshwater fish, rainbow trout, seafish, sticklebacks, herring, perch, marine invertebrates, oysters, mussels

Response Parameters: Various responses

108

Name: Hebda, Andrew J.

SEATECH Investigation Services (1980) Ltd.
5257 Morris Street
P.O. Box 2161, Station M
Halifax, Nova Scotia
B3J 3C4

Phone: 902-423-5296

Work Description: Applied ecotoxicological studies.

Tests Used: LD50, EC50, sublethal

Toxicants: Organophosphorus pesticides

Organisms: Cladocera, other invertebrates, larval invertebrates

Response Parameters: Behavior, diversity, species dominance

Name: **Higgins, Robert J.** 109

Freshwater Institute
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-269-7379

Work Description: Assessing embryonic development of the mixed function oxidase system in rainbow trout. Previous work has involved various aspects of crude oil toxicity.

Tests Used: LC50s, enzyme assays for induced MFOs

Toxicants: Polyaromatic hydrocarbons

Organisms: Rainbow trout, least cisco, arctic char, duckweed

Response Parameters: Enzyme (MFO) levels

Name: **Hill, Ian R. Dr.** 110

ICI Plant Protection Division
Jealotts Hill Res. Station
Bracknell, Berks
England

Phone: Brac. 424701

Work Description: Effects and fate of pesticides in aquatic and terrestrial environments.

Tests Used: Acute, chronic, bioaccumulation, laboratory, field

Toxicants: Pesticides

Organisms: Fish, invertebrates

Response Parameters: Various responses

Name: **Hilton, John W. Dr.** 111

University of Guelph
Dept. of Nutrition
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Dietary-nutrient interaction with environmental contaminants. (Dixon and Hilton (1981) *J. Fish Biol 19*(5):509-517), (Hilton and Hodson (1983) *J. Nutrition 113*:1241-1248).

Tests Used: Chronic

Toxicants: Arsenic, copper, selenium, organics, heavy metals

Organisms: Rainbow trout

Response Parameters: Growth, feed efficiency, tolerance level, lethal limits, metabolism, excretion rates

Name: Hobe, Helve **112**

University of Calgary
Dept. of Biology
Calgary, Alberta
T2N 1N4

Phone: 403-284-5274

Work Description: Physiological consequences of low ambient pH to freshwater fish. *J. Comp. Physiol. 104*(1) 1984(in press), *Can. J. Zool. 62* (1983), December issue (in press)

Tests Used: Acute, chronic

Toxicants: Acid pH

Organisms: *Catostromus commersoni* (white sucker), *Salmo gairdneri* (rainbow trout), *Ictalurus melas* (bullhead)

Response Parameters: Physiology, acid-base, ionoregulation

Name: Hodson, Peter V. **113**

Canada Centre for Inland Waters
Great Lakes Fisheries Research Branch
P.O. Box 5050
Burlington, Ontario
L7R 4A6

Phone: 416-637-4559

Work Description: Quantitative structure activity relationship, biochemical indicators of contaminant stress in fish, water quality objectives.

Tests Used: LC50, LD50s, embryo/larval, physiology, biochemistry, acute

Toxicants: Phenols, chlorobenzenes, chlorophenols, PAH, TBTO, lead, selenium, heavy metals

Organisms: Rainbow trout

Response Parameters: Growth, mortality, deformities, MFO enzyme, sorbital dehydrogenase, hematology, tissue somatic indices, contaminant levels, pharmacokinetics

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Name: Holder, A.S. **114**

Ontario Ministry of Natural Resources
Fisheries Branch
Whitney Block, Queen's Park
Toronto, Ontario
M7A 1W3

Phone: 416-965-5947

Work Description: Provincial program to monitor contaminants in fish and to provide advice to the public concerning consumption of fish from Ontario waters, in cooperation with the Ontario Ministry of the Environment, Guide to Eating Ontario Sport Fish.

Tests Used: Bioaccumulation

Toxicants: Mercury, pesticides, organic compounds

Organisms: Fish

Response Parameters: Residues in fish

Name: Holmes, Stephen B. 115

Forest Pest Management Institute
P.O. Box 490
Sault Ste. Marie, Ontario
P6A 5M7

Phone: 705-949-9461

Work Description: Investigate the toxicity and potential hazard of candidate forest chemicals and spray formulations to aquatic components of forest ecosystems.

Tests Used: Static

Toxicants: Insecticides, herbicides

Organisms: Salmonids, benthic stream invertebrates

Response Parameters: Acute responses

Name: Holtze, Keith E. 116

Ontario Ministry of the Environment
Dorset Research Centre
Dorset, Ontario
P0A 1E0

Phone: 705-766-2412

Work Description: Laboratory studies comparing sensitivities of different fish species (egg and fry stages) to aluminum/hydrogen ion.

Tests Used: Static, continuous flow, acute, chronic exposures

Toxicants: Metal ions, Al, Mn, Fe, Zn, heavy metals

Organisms: Lake trout, brook trout, white sucker, walleye, lake whitefish - early life stages (egg and fry)

Response Parameters: Hatch success, egg and fry mortality, whole body electrolytes, gill pathology, reproduction, physiology

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Name: Huang, Pan Ming 117

University of Saskatchewan
Dept. of Soil Science
Saskatoon, Saskatchewan
S7N 0W0

Phone: 306-343-4201

Work Description: Dynamics of dispersion of mercury and selenium from freshwater sediments.

Tests Used: N/A

Toxicants: Hg and Se, metals

Organisms: Rainbow trout (*Salmo gairdneri*), *Chironomus plumosus*

Response Parameters: Chloride, organics, EH, sediment properties, dissolved oxygen

Name: Hughes, George M. 118

Ministry of the Environment
Waste Management Branch
135 St. Clair Avenue, West
2nd Floor
Toronto, Ontario
M4V 1P5

Phone: 416-965-9671

Work Description: Hydrogeology of waste disposal operations.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Hunsinger, R.B. 119

Ministry of the Environment
Water Technology Section Laboratory Services
& Applied Research Branch
135 St. Clair Avenue West
Toronto, Ontario
M4V 1P5

Phone: 416-248-3935

Work Description: A monitoring program for 110 organic and inorganic chemicals at 35 locations.

Tests Used: N/A

Toxicants: Various chemicals

Organisms: N/A

Response Parameters: N/A

Name: Hutcheson, Michael S. Dr. 120

Atlantic Oceanics Company Ltd.
46 Fielding Avenue
Dartmouth, Nova Scotia
B3B 1E4

Phone: 902-463-0932

Work Description: Development of toxicity assay for dredge spoils using micro-organisms (lethality, growth, Ames test). Role of aluminum in toxicity of acidic waters to Atlantic salmon (light and electron (sem) microscopy, x-ray microanalysis).

Tests Used: Sublethal assays, growth, scope-for-growth, histopathology

Toxicants: Petroleum hydrocarbons, heavy metals, sediments

Organisms: Micro-organisms, Atlantic salmon, bivalves

Response Parameters: Scope-for-growth (respiration, feeding, assimilation), activity, lethality, behavior

Name: Hutchinson, Neil J. 121

University of Guelph
Dept. of Zoology
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Investigation of reproductive failure in fishes inhabiting acid lakes. Working at threshold pH value (5.8-6.8) and looking at organic acids and liming to see how they moderate toxicity of a mixture of Al-Zn-Cu.

Tests Used: Lethal tests, life cycle, chronic tests

Toxicants: Trace metal mixtures, pH, soft water

Organisms: *Jordanella floridae* (larval and sac fry), rainbow trout (sac fry and juvenile)

Response Parameters: Lethality, size, egg production, egg hatch, reproduction, growth

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Name: Hutchinson, Thomas C. 122

University of Toronto
Dept. of Botany
Toronto, Ontario
M5S 1A1

Phone: 416-978-3532, 4283

Work Description: Studies of mechanism of toxicity of heavy metals and aluminum to algae, and effects of acidity on rotifers. Effects of hydrocarbons, aqueous extracts of crude oil on algae.

Tests Used: Batch bioassays, cell counts, photosynthesis

Toxicants: Naphthalene, Corexit, Ni, Cu, Zn, Al, Co, Cd, Pb, As, Tl, oil dispersants, oils, heavy metals

Organisms: *Brachionus, Keratella* (rotifers), *Chlorella, Chlamydomonas, Euglena, Cryptococcus*

Response Parameters: Cell counts, utilization of substrates, photosynthesis, C-14 uptake

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Name: Hynes, Thomas P. 123

3125 Dieppe Street
Saskatoon, Saskatchewan
S7M 3S3

Phone: 306-384-5456

Work Description: Effects of uranium mine and mill effluents on freshwater ecosystems.

Tests Used: Field oriented

Toxicants: Uranium effluent

Organisms: Aquatic insects

Response Parameters: Population changes (species, numbers)

Name: Innes, R.P. 124

Hardy Associates (1978) Ltd.
4810-93 Street
P.O. Box 746
Edmonton, Alberta
T5J 2L4

Phone: 403-436-2152

Work Description: Groundwater contamination (petrochemical industry), waste disposal, land farming, surface water contamination, soil contamination caused by spills and groundwater discharge, pesticides, herbicides.

Tests Used: Chemical analytical; microbial and trout toxicity (acute tests)

Toxicants: 2 4-D, 2 4 5-T, phenols, dioxins

Organisms: N/A

Response Parameters: N/A

Name: Inniss, W.E. Dr. 125

University of Waterloo
Dept. of Biology
Waterloo, Ontario
N2L 3G1

Phone: 519-885-1211

Work Description: Effects of toxicants such as metals, chlorophenols, hydrocarbons, etc. on microorganisms from and in aquatic environments. Development of microbial toxicity tests. Biodegradation, etc.

Tests Used: Inhibition of growth, inhibition of respiratory activity, acute, chronic

Toxicants: Mercury, pentachlorophenol, lead, bisulfite, sodium sulfide

Organisms: *Pseudomonas fluorescens, Ankistrodesmus braunii, Scenedesmus quadricauda, Selenastrum capricornutum*

Response Parameters: Growth, respiration, chlorophyll production, nitrogen fixation, methane metabolism, membrane transport, $^{14}CO_2$ fixation

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Name: Jackson, T.A. Dr. 126

Freshwater Institute
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5036

Work Description: Biogeochemistry of mercury and other heavy metals in river systems, lakes and reservoirs, both field studies and experimental work. Emphasis on metal speciation, bio-availability, etc.

Tests Used: N/A

Toxicants: Methylated mercury, heavy metals

Organisms: Sedimentary microbes, trout fry

Response Parameters: Net methyl mercury production by microbes, methyl mercury accumulation by trout fry, bioaccumulation

Name: Jamieson, W.D. Dr. 127

Atlantic Research Laboratory
National Research Council
1411 Oxford Street
Halifax, Nova Scotia
B3H 3Z1

Phone: 902-426-8279

Work Description: Trace organic analytical mass spectrometry. Development of reference materials, analytical standards, analytical methods related to analyses of marine materials (water, sediments, biota).

Tests Used: N/A

Toxicants: PAH, PCBs, petroleum hydrocarbons, oils

Organisms: N/A

Response Parameters: N/A

Name: Jansen, Wolfgang 128

University of Manitoba
Dept. of Zoology
Winnipeg, Manitoba
R3T 2N2

Phone:

Work Description: Examining effects of sublethal stress from acidic water on swimming time under given current regime, ability to attain high buoyancy in still water and lower buoyancy in currents. Rate of adjustment also examined.

Tests Used: N/A

Toxicants: Hydrogen ions

Organisms: Fathead minnow (*Pimephales promelas*)

Response Parameters: Swimming time in current, buoyancy attained in still water and current, rate of buoyancy adjustment, behavior

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Name: Jenkins, W. Richard 129

Water Research Centre
Medmenham Laboratory
Henley Road
P.O. Box 16
Marlow
Buckinghamshire SL7 2HD U.K.

Phone: 049-166-531

Work Description: Research and commercial toxicology on freshwater fish, invertebrates and algae. Methodology of tests using young life-stages of fish. Tagging and tracking of salmon for deriving estuarine standards.

Tests Used: Acute, chronic, lethal, sublethal, fundamental biochemistry

Toxicants: Various compounds

Organisms: Salmonid fish, non-salmonid fish, *Daphnia*, algae

Response Parameters: Death, growth, survival of young stages, accumulation, behavior of salmon and sea trout in estuarine waters of low DO, sublethal responses

Name: Jessiman, Barry 130

NWRC 100 Gamelin (Hull)
Canadian Wildlife Service
Environmental Conservation Service
Environment Canada
Ottawa, Ontario
K1A 0E7

Phone: 819-997-1410

Work Description: Bioaccumulation of toxicants in aquatic vertebrates and invertebrates in the laboratory as a measure of potential for chronic toxicity (*Ecotox Environ Safety* 7:295-305 and 7:552-557).

Tests Used: Acute, chronic

Toxicants: Mirex, arsenic, aminocarb

Organisms: Amphipods, rainbow trout, isopoda

Response Parameters: LC50, LD50, accumulation kinetics

Name: Johansen, Peter H. Dr. 131

Queen's University
Dept. of Biology
Kingston, Ontario
K7L 3N6

Phone: 613-547-3246

Work Description: Effects of pentachlorophenol on early life stages of largemouth bass.

Tests Used: LC50, behavioral modifications, acute

Toxicants: Pentachlorophenol

Organisms: Largemouth bass (*Micropterus salmoides*)

Response Parameters: Feeding behavior, growth, predator efficiency and avoidance

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Name: Jolicoeur, Carmel 132

Université de Sherbrooke
Dept. de Chimie
Sherbrooke, P.Q.
J1K 2R1

Phone: 819-565-3617

Work Description: Influence of chemical contaminants on biodegradation processes (in biological waste water treatment).

Tests Used: Short-term toxicity tests on micro-organisms

Toxicants: Organic and inorganic, soluble forms

Organisms: Bacteria

Response Parameters: Heat output, temperature change, physiology

Name: Jonnavithula, Sita Devi 133

271 Argyle Street
Moncton, New Brunswick
E1C 3V5

Phone: 506-384-1793

Work Description: Phytoplankton and water quality.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Joubert, Gerald 134

Ministère de L'Environnement du Québec
Complexe Scientifique
2700 Einstein
Ste-Foy, Québec
G1P 3W8

Phone: 418-643-8225

Work Description: Tests on solid residues by germination inhibition. Lixiviation protocol on solid residues.

Tests Used: Static, acute, chronic, sublethal

Toxicants: $K_2Cr_2O_7$, $MgCL_2$

Organisms: Algae, *Daphnia*, Microtox®, various seeds

Response Parameters: EC50 or IC50, sublethal thresholds

Name: Kaiser, Klaus L.E. 135

Environmental Contaminants Division
National Water Research Institute
P.O. Box 5050
Burlington, Ontario
L7R 4A6

Phone: 416-637-4244

Work Description: QSAR investigations of aquatic toxicity data. Microtox (*Photobacterium phosphoreum*) tests of chloro- and para substituted phenols, benzenes, anilines, pyridines, nitrobenzenes and others.

Tests Used: Microtox, acute

Toxicants: Saline aqueous solutions

Organisms: Bacteria (Microtox), *Photobacterium phosphoreum*

Response Parameters: 30 min. EC50

Name: Kalin, Margarete 136

Boojum Research Ltd.
139 Amelia Street
Toronto, Ontario
M4X 1E6

Phone: 416-963-9420

Work Description: Reclamation by ecological engineering, development of passive polishing systems for effluent from mining operations, and the application of the chara process to wastewaters.

Tests Used: Ecosystem, community, bioaccumulation, bioconcentration, growth

Toxicants: Heavy metals, cyanide, trace minerals, uranium, pH, process water

Organisms: Macrophytes, algae, vegetation, moss

Response Parameters: Acid base regulation, biomass, growth, productivity

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Name: Kelso, Bryan W. 137

EPS, Kapilano 100
Park Royal South
West Vancouver, British Columbia
V7T 1A2

Phone: 604-666-6711

Work Description: Monitoring the receiving environment to determine the effect on water quality and biota around industrial discharges such as mines (with acid generation and heavy metal contamination) and pulp mill effluents.

Tests Used: N/A

Toxicants: Industrial discharges, pulp mill effluents

Organisms: N/A

Response Parameters: N/A

Name: Kemper, Bryan J. 138

Head, Environmental Assessment Section
Planning Division
Alberta Environment
9820-106 Street
9th Floor
Edmonton, Alberta
T5K 2J6

Phone: 403-427-2375

Work Description: Effect on native fish and aquatic macrophytes of Acrolein (Magnacide H), aquatic herbicide, in a large irrigation canal. Both free-ranging native fish and caged rainbow trout were examined during a test application.

Tests Used: N/A

Toxicants: Acrolein, aquatic herbicide

Organisms: Rainbow trout, native fish

Response Parameters: Survival, vitality, biomass, stem length, colour

Name: **Kent, Jane** 139

IEC BEAK Consultants
120-10751 Shellbridge Way
Richmond, British Columbia
V6X 2W8

Phone: 604-273-1601

Work Description: 96-h LC50 using fish.

Tests Used: 96-h LC50 bioassays, static, 24-h replacement, acute

Toxicants: Pulp mill effluents, industrial chemicals

Organisms: Rainbow trout, coho salmon, chinook salmon, three-spine stickleback

Response Parameters: Variable responses

Name: **Kiceniuk, J.W. Dr.** 140

Fisheries and Oceans Canada
Research & Resource Services
P.O. Box 5667
St. John's, Newfoundland
A1C 5X1

Phone: 709-772-2087

Work Description: Sublethal effects of low chronic hydrocarbon exposure to fish.

Tests Used: Sublethal

Toxicants: Crude oil, hydrocarbons

Organisms: Marine organisms, fish

Response Parameters: Bile acid composition, lipid metabolism, MFO, organ size, histopathology, biochemistry

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Name: **Kierstead, William G.** 141

Queen's University
Dept. of Biology
Kingston, Ontario
K7L 3N6

Phone: 613-547-3097

Work Description: Physiological effects of PCP on juvenile largemouth bass.

Tests Used: LC50, O_2 consumption (in vitro, in vivo), acute

Toxicants: PCP dose response, time response, phenols

Organisms: Largemouth bass (*Micropterus salmoides*)

Response Parameters: Lethality, oxygen consumption, physiology

Name: King, Elizabeth, F. 142

Water Research Centre
Stevenage Laboratory
Stevenage, Hertfordshire
England
SG1 1TH

Phone: 043-83-12444

Work Description: Evaluation of tests for biodegradability and toxicity to bacteria, and testing chemicals.

Tests Used: Screening/treatability

Toxicants: Synthetic organic chemicals, inorganics

Organisms: Mixed cultures of sewage-derived micro-organisms (effluent and activated sludge), *Pseudomonas fluorescens*, anaerobic sludge

Response Parameters: Respiration, nitrification, growth, light emission (Microtox®), gas prod. (anaerobic)

Name: Klaverkamp, J.F. Dr. 143

Freshwater Institute
Dept. of Fisheries and Oceans
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5032

Work Description: Scientific investigations of biochemical and physiological mechanisms of acidification/heavy metals toxicology in fish with special emphasis on lipid peroxidation and metallothionein. Accumulation and distribution of metals in fish.

Tests Used: Biochemical (lab and field), physiological

Toxicants: Acids, metals, smelter emissions

Organisms: Freshwater fish, primarily trout, suckers, pike

Response Parameters: Compensatory responses, metallothionein, lipid peroxidation, cardiovascular, respiratory physiology, ionoregulation

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Name: Kobayashi, N. Dr. 144

Doshisha University
Biological Laboratory
Kamikyo-ku, Kyoto
602 Japan

Phone: 75-251-3917

Work Description: Marine pollution bioassay using sea urchin, molluscan eggs and embryos. Freshwater pollution using molluscan eggs and embryos. Marine ecotoxicology testing with echinoderms.

Tests Used: Bioassay

Toxicants: Heavy metals, organic chemicals, polluted waters

Organisms: Sea urchin eggs and embryos, molluscan eggs and embryos

Response Parameters: Fertilization, cleavage, blastula, gastrula, pluteus and metamorphosis (sea urchin); cleavage, gastrulation, veliger and larvae (mollusca)

Name: Koepp, Stephen J. Dr. 145

Montclair State College
Dept. of Biology
Upper Montclair, New Jersey 07043
U.S.A.

Phone: 201-893-7173

Work Description: Histopathology of gill and gonadal tissues of blue mussels (*M. edulis*) exposed to contaminated marine sediments.

Tests Used: Acute, subchronic bioassays

Toxicants: Mercury, zinc, cadmium, heavy metals

Organisms: *Fundulus heteroclitus*, *Palaemonetes pugio*, *Mytilus edulis*

Response Parameters: Survival, histopathology, cytopathology

Name: Korndoerfer, Alfred L. 146

State of New Jersey
Department of Environmental Protection
Division of Water Resources
Box CN-029
Trenton, New Jersey 08625
U.S.A.

Phone: 609-292-0427

Work Description: Supervisor, aquatic toxicology laboratory performing acute toxicity tests for permit development and compliance. Responsible for development of Bioassay Laboratory Certification Program, regulation setting minimum standards for laboratories submitting data to State of New Jersey.

Tests Used: Acute, 24-h, range-finding static and 96-h renewal and on-site flow-through

Toxicants: Industrial effluent and municipal effluents

Organisms: *Pimephales promelas*, *Menidia menidia*, *Palaemonetes pugio*, bluegills

Response Parameters: Lethality

Name: Korver, Robert M. 147

University of Guelph
Dept. of Zoology
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Effects of territorial and environmental preferences on pollutant avoidance behavior in fish.

Tests Used: Sublethal, preference/avoidance behavior, acute

Toxicants: Zn, heavy metals

Organisms: *Lepomis gibbosus*, other centrarchids

Response Parameters: Locomotory behavior

Name: Kovacs, Tibor 148

Pulp and Paper Research Institute of Canada
570 Boul. St-Jean
Pointe-Claire, Quebec
H9R 3J9

Phone: 514-697-4110

Work Description: Biotic and abiotic factors affecting effluent toxicity, evaluation of fish flavour, effluent detoxification.

Tests Used: Static, flow-through, lethal, sublethal

Toxicants: Industrial effluents

Organisms: Rainbow trout

Response Parameters: Taste, growth, mortality, egg hatching, reproduction

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Name: Kruzynski, G.M. 149

West Vancouver Laboratory
Dept. of Fisheries and Oceans
4160 Marine Drive
West Vancouver, British Columbia
V7V 1N6

Phone: 604-922-6222

Work Description: Effects of primary treated municipal waste on juvenile chinook salmon. Feeding behaviour of fish in intertidal zone receiving discharge. Behaviour in laboratory water column simulator in relation to hypoxia and selected pollutants.

Tests Used: Lethal, sublethal, flow-through, behaviour, enzyme, bioaccumulation

Toxicants: Primary treated sewage wastes, reduced dissolved oxygen

Organisms: Juvenile chinook salmon, juvenile salmonoids, flatfish

Response Parameters: Survival, growth (+-exercise), salinity tolerance, blood chemistry, selected organic uptake/partitioning, enzyme (UDP-glucuronyal tranferase) activity, swimming behaviour

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Name: Lakshminarayana, J. Dr. 150

Université de Moncton
Dept. de Biologie
Moncton, New Brunswick
E1A 3E9

Phone: 506-858-4323

Work Description: Water quality, plankton, and primary production in the Northumberland Strait.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Lalande, Marc 151

8475 Cluny
St-Leonard, Quebec
H1R 2X4

Phone: 514-325-5831

Work Description: Acute toxicity of four heavy metals on five indigeneous crustacean species.

Tests Used: Acute, static

Toxicants: Cd, Cu, Hg, Zn, heavy metals

Organisms: *Chydorus sphauicus, Daphnia rosea, Skistodiaptomus oregonensis, Aglaediaptomus leptopus, Tropocyclops prasinus mexicanus*

Response Parameters: Median immobilization concentration, 48-h IC50

Name: Laliberte, Denis 152

Environnement Québec
Qualite Des Eaux
2360 Chemin
Ste-Foy, Québec
G1V 4H2

Phone: 418-643-4425

Work Description: Responsable du reseau de surveillance des substances toxiques dans le milieu aquatique - analyses de metaux, BPC, pesticides, etc., dans eau-sediments-poissons-plantes aquatiques au Québec.

Tests Used: N/A

Toxicants: Pesticides

Organisms: N/A

Response Parameters: N/A

Name: Langis, Rene 153

INRS-Eau, Université du Québec
C.P. 7500
Ste-Foy, Québec
G1V 4C7

Phone: 418-657-2560

Work Description: Effect of dissolved organic matter on phosphorus and nitrogen uptake by algae, and its effect on the products of photosynthesis.

Tests Used: Sublethal tests, batch

Toxicants: Dissolved organics

Organisms: *Selenastrum capricornutum*, green algae

Response Parameters: ATP, cell numbers, phosphorous and nitrogen uptake, carbon-14 pathways

Name: Lasenby, David C. 154

Trent University
Dept. of Biology
Peterborough, Ontario
K9J 7B8

Phone: 705-748-1356

Work Description: Accumulation and transport of heavy metals by benthic invertebrates.

Tests Used: Sublethal, chronic

Toxicants: Zinc, cadmium, lead, heavy metals

Organisms: *Mysis relicta, Chaoborus, Pontoporeia*

Response Parameters: Bioaccumulation

Name: Law, Francis Dr. 155

Simon Fraser University
Dept. of Biological Sciences
Burnaby, British Columbia
V5A 1S6

Phone: 604-291-4285

Work Description: Toxicokinetics of environmental chemicals in fish.

Tests Used: Acute, sublethal

Toxicants: Chlorophenols, chlorodiphenyl ethers

Organisms: Trout, skate

Response Parameters: Hepatic mixed-function oxidases, concentration of pollutants in blood and tissues, biochemistry

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Name: Lawson, Dennis W. 156

Environment Canada
Environmental Protection Service
1901 Victoria Avenue
Regina, Saskatchewan

Phone: 306-359-6462

Work Description: Toxicity of uranium mine/mill effluents, environmental effects of these effluents. Deep geological disposal of radioactive wastes.

Tests Used: N/A

Toxicants: Industrial effluents, receiving waters, sediments

Organisms: Fish, Algae, other small organisms in water and sediment

Response Parameters: Death, movement, other changes, behavior

Name: Leatherland, John F. 157

University of Guelph
Dept. of Zoology
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Effect of organochlorines on metabolism and reproduction of fish. Studies of environmental carcinogens in the Great Lakes.

Tests Used: Bioassays

Toxicants: PCBs, Mirex

Organisms: Rainbow trout, coho salmon, fathead minnow, cyprinids

Response Parameters: Physiological, histological, endocrinological

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Name: Leduc, Gerard 158

Concordia University
Dept. of Biological Sciences
Montreal, Quebec
H3G 1M8

Phone: 514-879-2856

Work Description: Mode of action of cyanide in freshwater fish.

Tests Used: Chronic, flow-through tests

Toxicants: Cyanide

Organisms: Freshwater fish

Response Parameters: Growth, cytochrome oxidase, bioaccumulation of SCN

Name: Lee, Kenneth 159

Atlantic Oceanographic Laboratory
Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, Nova Scotia
B2Y 4A2

Phone: 902-426-2528

Work Description: Fate and effects of crude oil, oil dispersants and trace metals in aquatic ecosystems. Lee, K., "Vanadium in the Aquatic Ecosystem," in: Aquatic Toxicology, J.O. Nriaqu (ed.), John Wiley & Sons, N.Y., pp. 155-187 (1983).

Tests Used: Sublethal, physiological responses, acute, chronic

Toxicants: Crude oil, Corexit 9527, vanadium, dispersants, metals

Organisms: Natural phytoplankton and bacterial communities, laboratory cultures of phytoplankton

Response Parameters: Effects on primary production, heterotrophy, nutrient uptake kinetics

Name: Lee, Richard **160**

Skidaway Institute of Oceanography
P.O. Box 13687
Savannah, GA 31416
U.S.A.

Phone: 912-356-2494

Work Description: Induction of cytochrome P-450 forms by organic pollutants in crabs. Fate of organic pollutants in marine waters.

Tests Used: Flow-through, exposure in food, water and sediment

Toxicants: Benzo-α-pyrene, PCBs

Organisms: Microbes, crabs, shrimp, lobsters

Response Parameters: New cytochromes P-450 produced after exposure to toxic substances

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Name: Lee, Wen Y. **161**

Marine Science Institute
University of Texas
Port Aransas, Texas 78373
U.S.A.

Phone: 512-749-6798

Work Description: Biological effects of petroleum oils on redfish eggs and larvae.

Tests Used: Static

Toxicants: Petroleum oil, pharmaceutical wastes, hydrocarbons, industrial effluents

Organisms: Marine invertebrates, larval fish

Response Parameters: Mortality, behavior, growth, reproduction, biochemical composition

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Name: Lehtinen, Karl J.P. Dr. **162**

Swedish Env. Res. Inst.
Baltic Sea Laboratory
Utovagen 5
S-371 37 Karlskrona
Sweden

Phone: 455-84440

Work Description: Project leader for a project covering evaluation of the environmentally acceptable bleaching process for the pulp mill industry.

Tests Used: Mesocosm studies, physiology, biochemistry

Toxicants: Pulp mill effluents, industrial effluents

Organisms: Algae, fish, invertebrates

Response Parameters: Response at ecosystem level, hematological and physiological levels, histopathological and parasitic levels

Name: Leonhard, Sharon L. 163

Government of Canada
Fisheries and Oceans
Freshwater Institute
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5235

Work Description: Evaluation of the effects of depressed pH on cultures of aquatic invertebrates maintained in the laboratory under controlled environmental conditions.

Tests Used: Chronic, reproductive impairment, calcium uptake

Toxicants: Acid, pH

Organisms: *Daphnia magna*, *Daphnia pulex*, *Daphnia galeate mendotae*, crayfish, *Orconectes virilis*, *Diaptomus minutus*, *Diaphanosoma* sp., *Bosmina* sp.

Response Parameters: N/A

Name: Leppard, Gary Dr. 164

Aquatic Ecology Division
National Water Research Institute
Burlington, Ontario
L7R 4A6

Phone: 416-637-4232

Work Description: Editor: Trace Element Speciation in Surface Waters and Its Ecological Implications, Plenum Publ. Corp. (1983). Investigator: Lake physiology, with particular reference to microbes; lake colloids, particularly those acting as carriers for pollutants.

Tests Used: Acute

Toxicants: Heavy metals

Organisms: Bacteria, micro-algae

Response Parameters: Ultrastructural changes and physiological adaptation, with particular reference to secretion processes

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Name: Lewis, Michael A. 165

AIIOH, ITC, Procter and Gamble Co.
Cincinnati, OH 45217
U.S.A.

Phone: 513-627-6010

Work Description: Determine effects of organic chemicals on natural plankton communities.

Tests Used: Enclosure studies

Toxicants: Surfactants, metals, pesticides

Organisms: Natural phytoplankton, zooplankton communities

Response Parameters: Diversity and similarity indices, photosynthesis of Chlorophylla

Name: Li, M.F. 166

Dept. of Fisheries and Oceans
Fisheries and Environmental Sciences
Halifax Laboratory
P.O. Box 550
Halifax, Nova Scotia
B3J 2S7

Phone: 902-426-6269

Work Description: Using tissue culture bioassay methods to detect environmental pollutants.

Tests Used: In vitro bioassay for toxicants

Toxicants: N/A

Organisms: Mammalian cells, fish cells

Response Parameters: Growth, multiplication, oxygen up-take, cytological changes

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Name: Liu, Dickson 167

National Water Research Institute
867 Lakeshore Road
Burlington, Ontario
L7R 4A6

Phone: 416-637-4576

Work Description: Biodegradation and toxicity assessment of organic toxicants (current work). Toxicity of chlorobenzenes, toxicity-structure relationship of chlorophenols, factors affecting toxicity assessment, development of new test.

Tests Used: Microbial procedures

Toxicants: Organics, industrial wastes

Organisms: Micro-organisms, mainly *Bacillus* sp. and mixed cultures from activated sludge

Response Parameters: Dehydrogenase activity, oxygen uptake, growth inhibition, colony formation.

Name: Lobel, Paul, B. 168

Marine Sciences Research Laboratory
Memorial University of Newfoundland
St. John's, Newfoundland
A1C 5S7

Phone: 709-726-6681

Work Description: Biochemical individuality in the uptake and toxicity of heavy metals to marine invertebrates.

Tests Used: Frequency distributions of zinc concentrations in natural populations of mussels, localization of zinc within individual mussels.

Toxicants: Zinc

Organisms: Mussel, *Mytilus edulis*

Response Parameters: Comparison between individual mussels

Name: Lockhart, Lyle W. 169

Freshwater Institute
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-7113

Work Description: Oil toxicology and environmental chemistry. Biochemical pathology/comparative biochemistry, bioconcentration, phytotoxicity.

Tests Used: Sublethal, lethal

Toxicants: Oil, pesticides

Organisms: Larval fish, adult fish, aquatic insects, duckweed

Response Parameters: Biochemical responses, growth rates, death

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Name: Lonning, Sunniva 170

University of Tromso
Institute of Biology and Geology
9001 Tromso
Norway

Phone: 083-70011

Work Description: Embryological effects of crude oil and oil components; at the moment, aromatic compounds, mud and photooxidation products.

Tests Used: 4-day test, acute

Toxicants: Crude oil, oils

Organisms: Gametes, embryos and larvae from sea urchins and marine fish

Response Parameters: Death and sublethal effects, pathology, retardation, inactivity, subcellular, chromosomes, behavior

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Name: Lozano, Stephen J. 171

Center for Lake Superior Environmental Studies
University of Wisconsin - Superior
Superior, Wisconsin 54880
U.S.A.

Phone: 218-727-6692

Work Description: Development of quantitative structure activity relationships and pattern recognition techniques for estimating the hazard of chemicals

Tests Used: Acute, chronic

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Lubow, Steven P. 172

State of New Jersey
Dept. of Environmental Protection
P.O. Box CN 029
Trenton, New Jersey 08625
U.S.A.

Phone: 609-633-7020

Work Description: Regulation of dischargers. Establishment of allocation procedures and standards for toxics. Establishment of biomonitoring requirements. Compliance biomonitoring (Citations N.J.A.C. 7:9, N.J.A.C. 7:8 and N.J.A.C. 7:18).

Tests Used: Static renewal, flow-through, 96-h toxicity tests, acute, lethality

Toxicants: Industrial effluents

Organisms: *Pimephales promelas, Lepomis macrohirus, Menidia menidia, Cyprinodon variegatus, Palaemonetes pugio, Mysidopsis bahia*

Response Parameters: Death

Name: Lungle, M.L. 173

University of Guelph
Dept. of Environmental Biology
Guelph, Ontario
N1G 2W1

Phone: 519-822-0880

Work Description: Impact of pesticides on littoral zone of ponds and sloughs.

Tests Used: Chronic

Toxicants: Pesticides

Organisms: Benthos, zooplankton

Response Parameters: Various responses

Name: Luxon, Lynne 174

Dept. of Fisheries and Oceans
Great Lakes Fisheries Research Branch
Environmental Toxicology
867 Lakeshore Road
Burlington, Ontario
L7R 4A6

Phone: 416-637-4565

Work Description: Studying the activity of mixed-function oxidase system in fish as a monitoring tool for the presence of (and response to) hydrocarbons *in situ*.

Tests Used: Bioassays, enzyme assays

Toxicants: Polynuclear aromatic hydrocarbons, PAHs

Organisms: Lake trout, rainbow trout, white suckers, carp, cyprinids

Response Parameters: Mixed-function oxidase (MFO) - specifically aryl hydrocarbon hydroxylase (AHH), biochemistry

Name: Lyons, Larry A. **175**

Betz Laboratories
Aquatic Toxicology Laboratory
Sommerton Road
Trevose, PA 19047
U.S.A.

Phone: 215-355-3300

Work Description: Primarily conduct acute toxicity tests, static and dynamic, on Betz products and customers' wastewater.

Tests Used: Acute toxicity

Toxicants: Betz products, industrial effluents

Organisms: Rainbow trout, fathead minnow, bluegill sunfish, *Daphnia magna*

Response Parameters: Mortality, stress

Name: MacCrimmon, Hugh R. Dr. **176**

University of Guelph
Dept. of Zoology
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Distribution of mercury and other metals in freshwater ecosystems.

Tests Used: Lethal, sublethal

Toxicants: Mercury, heavy metals

Organisms: Coldwater and warmwater freshwater fishes

Response Parameters: Growth, behavior, reproduction

Name: Mackay, Donald Prof. **177**

University of Toronto
Dept. of Chemical Engineering
Toronto, Ontario
M5S 1A4

Phone: 416-978-4019

Work Description: Acute toxicity tests for structure-activity relationship studies, relating physicochemical properties to acute lethal toxicity.

Tests Used: Acute, lethal, sublethal

Toxicants: Hydrocarbons, dispersants

Organisms: *Daphnia*, *Artemia*

Response Parameters: Lethality, behavior, molting, development

Name: Mackay, W.C. 178

University of Alberta
Dept. of Zoology
Edmonton, Alberta
T6G 2E9

Phone: 403-432-3309

Work Description: Sublethal effects of copper on fish. Previous work on the sublethal effects of DDT and methyl mercury, interactions of pH and Cu. Editor: Proceedings 9th Annual Aquatic Toxicity Workshop.

Tests Used: Incipient LC50, lethal, acute

Toxicants: Cu, Hg, DDT, pH, heavy metals

Organisms: Fish, mainly rainbow trout

Response Parameters: Visual threshold, death, mucous secretion

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Name: MacKnight, Scott Dr. 179

OceanChem Ltd.
Suite 46
1000 Windmill Road
Dartmouth, Nova Scotia
B3B 1L7

Phone: 902-463-0114

Work Description: Assessment of impact of dredging and dredged material and impact of disposal of drilling muds and well fluids in the marine environment.

Tests Used: Natural, field

Toxicants: Trace metals, cadmium

Organisms: *Macoma balthica, Placopecten magellanicus*, sand dollars

Response Parameters: Body burdens, bioaccumulation

Name: MacLatchy, John 180

Industrial Programs Branch
Environmental Protection Service
Environment Canada
351 St. Joseph Blvd.
Ottawa, Ontario
K1A 1C8

Phone: 819-997-2270

Work Description: Assembling case law under Sections 33 and 31 of Fisheries Act which includes cases where toxicity tests are presented in court.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Majewski, H.S. 181

Freshwater Institute
Dept. of Fisheries and Oceans
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5000

Work Description: Investigate the bioaccumulation and depuration of two aromatic hydrocarbons in a species of marine alga and in the mussel, and investigate the fate of these compounds in the food chain.

Tests Used: Food chain

Toxicants: Benzo-α-pyrene/fluorene, hydrocarbons

Organisms: *Mytilus edulis, Phaeodactulum tricornutum*

Response Parameters: Bioaccumulation, depuration

Name: Maki, Alan W. 182

Exxon Corporation
P.O. Box 235
East Millstone, N.J. 08873
U.S.A.

Phone: 201-873-6265

Work Description: Aquatic Toxicology, Ecology. Fate and effects of energy-related materials.

Tests Used: Acute, chronic, multispecies

Toxicants: Energy-related compounds

Organisms: Algae, invertebrates, fish

Response Parameters: Various responses

Name: Mallard, Charles 183

Lakehead University
Chemistry Dept.
Oliver Road
Thunder Bay, Ontario
P7B 5E1

Phone: 807-345-2121

Work Description: Aquatic toxicity of organics utilizing a flow-through system (freshwater). Analysis of water and tissue by G.C.

Tests Used: 96-h acute, ELS chronic, bioaccumulation, chronic

Toxicants: Chlorinated benzenes, chlorinated phenols, hydrocarbons

Organisms: American flagfish, brook trout

Response Parameters: Egg hatchability, survival, growth, reproduction

Name: Malley, D.F. Dr. 184

Freshwater Institute
Fisheries and Oceans
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5173

Work Description: Effects of acidic and basic pH and Ca uptake by postmolt crayfish, mechanism of the inhibition of Ca uptake by acid, effects of acid and aluminum on Ca uptake by postmolt crayfish, effects of aluminum on molluscs (e.g., O_2 consumption, ionic balance).

Tests Used: Acute, short-term, laboratory

Toxicants: Acid, metals, Al, Mn, Cd

Organisms: Crayfish, *Orconectes virilis*, freshwater mussels, *Anodonta grandis grandis*

Response Parameters: Ca uptake in postmolt crayfish, oxygen consumption and ionic balance in molluscs, physiology

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Name: Mantel, Linda H. Dr. 185

City College
Dept. of Biology
Convent Avenue
New York, NY 10031
U.S.A.

Phone:

Work Description: Effect of toxicants on growth, metabolism, hemolymph, and stored nutrients in juvenile *Callinectes sapidus*.

Tests Used: Sublethal, short-term, acute

Toxicants: Various compounds

Organisms: Juvenile blue crabs, *Callinectes sapidus*

Response Parameters: Physiological, (growth, metabolism, hemolymph, nutrient storage)

Name: Marking, Leif L. 186

National Fishery Research Laboratory
P.O. Box 818
La Crosse, WI 54601
U.S.A.

Phone: 608-783-6451

Work Description: Exposure to fish and aquatic invertebrates to find new fishery chemicals or develop registrations on toxicants, anesthetics, and therapeutants with EPA and FDA.

Tests Used: Static, flow-through

Toxicants: Fishery chemicals

Organisms: Fish (rainbow trout, bluegill, channel catfish); invertebrates (*Daphnia*, *Gammarus*, crayfish, clams)

Response Parameters: Mortality, growth, reproduction

Name: Mathers, Alastair R. **187**

Queen's University
Dept. of Biology
Kingston, Ontario
K7L 3N6

Phone: 613-547-3097

Work Description: PCP with bass - examining changes in lethality with age, also documenting behavioral and growth changes with sublethal doses. Dietary uptake of methyl mercury in walleye and pike

Tests Used: 96-h LC50, long-term, sublethal, acute, chronic

Toxicants: PCP, methyl mercury, phenols

Organisms: Largemouth bass, walleye, pike, guppy

Response Parameters: Lethality, growth, behavior

Name: Matheson, A.T. **188**

University of Victoria
Dept. of Biochemistry and Microbiology
Victoria, British Columbia
V8W 2Y2

Phone: 604-721-7085

Work Description: Tolerance of heavy metals and hepatic metallothionein in salmonids as an indicator of exposure to metals, sequencing of rainbow trout and coho salmon metallothionein, kinetics of induction, effect of metals on disease resistance.

Tests Used: Acute, chronic, *in situ* exposure

Toxicants: Zinc, copper, cadmium and mixtures, heavy metals

Organisms: Rainbow trout, coho salmon, chinook salmon

Response Parameters: Hepatic metallothionein concentrations, growth, survival, mitotic index, 35/s cysteine incorporation, biochemistry

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Name: Mayes, Monte A. **189**

The Dow Chemical Company
Environmental Sciences Research
1702 Building
Midland, MI 48640
U.S.A.

Phone: 517-636-9135

Work Description: Research and testing in fish toxicology. Specific projects include: site specific studies, toxicity of labile compounds, and the influence of the age of test fish as well as water temperature on the toxic response.

Tests Used: Static, flow-through, acute, embryo-larval

Toxicants: Organic chemicals

Organisms: Fathead minnow, rainbow trout, bluegill

Response Parameters: Mortality, growth (embryo-larval test), sublethal effects (e.g., melanosis and CNS signs)

Name: Mayfield, Colin I. 190

University of Waterloo
Dept. of Biology
Waterloo, Ontario
N2L 3G1

Phone: 519-885-1211

Work Description: Bioassay development, toxicity test procedures using algae and bacteria, algae/bacteria interactions, multiple species interactions, multiple toxicant interactions, groundwater toxicity.

Tests Used: Acute, sublethal

Toxicants: Organics, metals

Organisms: Algae, bacteria

Response Parameters: Growth, chlorophyll fluorescence characteristics, enzyme activity

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Name: McCarter, J.A. 191

University of Victoria
Dept. of Biochemistry and Microbiology
Victoria, British Columbia
V8W 2Y2

Phone: 604-721-7085

Work Description: Tolerance of heavy metals and hepatic metallothionein in salmonids as an indicator of exposure to metals, sequencing of rainbow trout and coho salmon metallothionein, kinetics of induction, effect of metals on disease resistance

Tests Used: Acute, chronic, *in situ* exposure

Toxicants: Zinc, copper, cadmium, heavy metals

Organisms: Rainbow trout, coho salmon, chinook salmon

Response Parameters: Hepatic metallothionein concentrations, growth, survival, mitotic index, 35/s cysteine incorporation

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Name: McCarty, L.S. 192

MacLaren-Plansearch Inc.
33 Yonge Street, East
Toronto, Ontario
M5E 1E7

Phone: 416-365-7275

Work Description: Environmental monitoring, surface water quality guidelines, water use objectives, criteria document for chlorinated benzenes.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: **McConnell, Andrew** 193

Institute for Environmental Studies
University of Toronto
Toronto, Ontario
M5S 1A4

Phone: 416-978-4309

Work Description: Interaction of copper and nickel and their effects and uptake patterns on fathead minnows (*P. promelas*).

Tests Used: Acute, 96-h, lethality

Toxicants: Copper, nickel

Organisms: Fathead minnows (*Pimephales promelas*), *Daphnia magna*

Response Parameters: Metal concentrations in selected tissues/monitoring time to death, bioaccumulation

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Name: **McCormick, Howard J.** 194

U.S. EPA-Envir. Res. Lab - Duluth
6201 Congdon Blvd.
Duluth, MN 55804
U.S.A.

Phone: 218-727-6692

Work Description: pH effects on gill histology in freshwater fishes and a whole lake ecosystem acidification study.

Tests Used: Chronic, ecosystem, field tests, flow-through, histopathology, impact assessement (ecological), *in situ*, lab-vs-field studies, laboratory, physiology, reproduction

Toxicants: pH, hydrogen ions

Organisms: Freshwater fishes (bass, rockbass, crappies, yellow perch, fathead minnows)

Response Parameters: Death, growth, behavior, reproduction, gill and ovarian histology, blood, gills

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Name: **McDonald, Gordon** 195

McMaster University
Dept. of Biology
Hamilton, Ontario
L8S 4K1

Phone: 416-525-9140

Work Description: Mechanisms of toxicity of H^+, Cd, Al^{+++}, Cu and Zn to freshwater vertebrates in relation to water hardness. (*Can. J. Zool. 61*:691 (1983), *J. exp. Biol. 102*:123-155 (1983)).

Tests Used: Sublethal, 10-day exposures

Toxicants: Cd, Al, Zn, heavy metals

Organisms: Rainbow trout, brook trout, white suckers, smallmouth bass, largemouth bass, yellow perch, various larval amphibian species

Response Parameters: Gill ion regulation, acid-base regulation, blood chemistry, metal uptake (tissues/whole body), circulatory function, kidney function, physiology

Name: **McGeachy, Sandi** 196

Concordia University
Biological Sciences
1455 DeMaisonneuve Blvd., West
Montreal, Quebec
H3G 1M8

Phone: 514-879-2856

Work Description: Effect of cyanide poisoning on exercised and non-exercised rainbow trout (with G. Leduc).

Tests Used: 96-h LC50, 15-20 day sublethal, growth, acute, lethality

Toxicants: Cyanide, metals

Organisms: Rainbow trout

Response Parameters: Growth, liver glycogen, hematocrit, exercise and plasma SCN-levels

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Name: **McLarty, Archie** 197

Ontario Ministry of the Environment
West Central Region
P.O. Box 2112
Hamilton, Ontario
L8N 3Z9

Phone: 416-521-7640

Work Description: Input to biomonitoring requirements of Certificates of Approval (i.e., Discharge permits). Design of biomonitoring programs, selection of tests, review of results, implementation of corrective measures.

Tests Used: 96-h LC50, acute

Toxicants: Industrial effluents

Organisms: Rainbow trout, yellow perch, *Gammarus fasciatus*, smallmouth bass, *Microspora*

Response Parameters: Lethality, egg hatchability, reduced/altered growth rates, taste tests, reproduction

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Name: **McLeay, Don** 198

D. McLeay & Associates Ltd.
300-1497 Marine Drive
West Vancouver, British Columbia
V7T 1B8

Phone: 604-922-0355

Work Description: Examination of the acute and chronic effects of suspended sediment from placer mining operations on juvenile Arctic grayling (*Thymallus arcticus*).

Tests Used: Acute, sublethal, lethal, life cycle

Toxicants: Suspended sediment, herbicides, pulp mill effluent

Organisms: Salmonid fish

Response Parameters: Acute stress bioassays, temperature tolerance tests, sealed jar bioassays, growth, behavioral tests, development

Name: **McNicol, R.E.** **199**

Freshwater Institute
Fisheries and Oceans
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5005

Work Description: Study effects of toxicant exposure on the behavior of stream macroinvertebrates.

Tests Used: Acute, chronic, sublethal

Toxicants: Low pH, insecticides (methoxychlor, fenitrothion)

Organisms: Stoneflies: *Acroneuria lycorias, Paragnetina media, Pteronarcys pictetii*

Response Parameters: Locomotor activity, drift, aggression, behavior

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Name: **Metcalfe, Chris D.** **200**

Environmental Resource Sciences Program
Trent University
Peterborough, Ontario
K9J 7B8

Phone: 705-748-1272

Work Description: Testing of industrial effluent extracts for mutagenic, clastogenic and carcinogenic activity.

Tests Used: Ames mutagenicity test, fish carcinogenesis assay, acute

Toxicants: Industrial effluents

Organisms: Bacterial assays, tissue culture assays, rainbow trout

Response Parameters: Mutagenicity, carcinogenicity

Name: **Meyn, Elizabeth** **201**

Montana State University
Fisheries Bioassay Laboratory
111 Lewis
Bozeman, MT 59717
U.S.A.

Phone: 406-994-3371

Work Description: Comparative toxicity of organics, toxicity of ammonia and nitrite, toxicity of cyanide and related compounds.

Tests Used: Acute, chronic, flow-through, static

Toxicants: Organics, ammonia, nitrite, cyanide compounds

Organisms: Rainbow trout, various warm water fish, *Daphnia magna, Tanytarsus dissimilis*

Response Parameters: Death, bioaccumulation

Name: Miller, Don C. **202**

U.S. EPA-Environmental Research Lab
South Ferry Road
Narragansett, RI 02882
U.S.A.

Phone: 401-789-1071

Work Description: Development of assays using marine planktonic crustacea (Mero- and holoplankton) to quantify effects of toxic chemicals and mixed wastes.

Tests Used: Static, flow-through

Toxicants: Metals, sewage sludge, industrial effluents

Organisms: *Eurytemora affinis*, *Eurytemora herdmani*, *Pseudocalanus minutus*, *Mysidopsis bahia*, *brachyuran*, and Cirriped larvae

Response Parameters: Survival, development rate, post-molt morphology, behavior, reproduction, population models

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Name: Miller, Donald R. Dr. **203**

National Research Council
Division of Biological Sciences
Ottawa, Ontario
K1A 0R6

Phone: 613-593-6912

Work Description: Toxicity of heavy metals, especially their organic forms, to aquatic and mammalian organisms. Includes environmental transformation and establishment (with help from DOE) of an Ecotoxicity testing lab following OECD guidelines and GLP requirements.

Tests Used: OECD approved tests

Toxicants: Metals, organometals

Organisms: Algae, *Daphnia*, fish, macrophytes

Response Parameters: Various responses, growth, reproduction, development

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Name: Millner, Glenn C. **204**

Ecology and Environmental Inc.
195 Sugg Road
P.O. Box D
Buffalo, N.Y. 14225
U.S.A.

Phone: 716-632-4491

Work Description: Development phase of using the Beckman Microtox for screening acute toxicity and evaluating chemicals from controlled and uncontrolled hazardous waste sites.

Tests Used: Acute, chronic, static, flow-through, life cycle

Toxicants: Sediment, hazardous wastes, industrial effluent, industrial chemicals

Organisms: Rainbow trout, bluegill, sunfish, *Tilapia*, fathead minnows, *Daphnia magna*, *Daphnia pulex*, *Mysid* shrimp

Response Parameters: Mortality, immobilization, EC50, LC50

Name: Mineau, Pierre **205**

National Wildlife Research Centre
Canadian Wildlife Service
Ottawa, Ontario
K1A 0E7

Phone: 819-997-1410

Work Description: Currently pesticide evaluator for Canadian Wildlife Service - review of data (including aquatic toxicology) submitted in support of Pesticide Registration. Previous work with fish-eating birds and Great Lakes contamination.

Tests Used: Field assessments

Toxicants: Contaminant mixtures

Organisms: Herring gull, double-crested cormorant

Response Parameters: Demography, reproduction, behavior

Name: Mitchell, David G. **206**

E.V.S. Consultants Ltd.
195 Pemberton Avenue
North Vancouver, British Columbia
V7P 2R4

Phone: 604-986-4331

Work Description: Bioassays - Acute and chronic on salmonids, amphipods, euphausiids, and mussel embryos. Survey of biological effects of toxicants upon Puget Sound biota (III). NOAA Tech. Memo (in prep.).

Tests Used: LC50, life cycle bioassays, acute, chronic

Toxicants: Contaminated sediments, mine tailings

Organisms: Rainbow trout, coho salmon, *Rhepoxinius*

Response Parameters: Mortality, growth

Name: Moccia, Richard D. **207**

P.O. Box 434
Erin, Ontario
N0B 1T0

Phone: 519-833-2989

Work Description: Primarily working on histopathology effects of low pH and heavy metal stress with Ministry of the Environment. Some gamete testing.

Tests Used: Histopathology, gamete development test, acute

Toxicants: Low pH, aluminum

Organisms: Rainbow trout

Response Parameters: Tissue pathology, sperm motility, reproduction

Name: Monenco Limited 208

500 Beaverbrook Court
Fredericton, New Brunswick
E3B 5X4

Phone: 506-454-3309

Work Description: Monenco conducts inhouse bioassay tests as well as biological monitoring of industrial waste receiving streams.

Tests Used: Static bioassay tests, acute

Toxicants: Industrial effluent

Organisms: Fish, *Salmo salar*, *Salmo gairdneri*, *Gasterosteus aculeatus*

Response Parameters: Acute, lethality

Name: Monteith, Derick D. 209

B.C. Research
3650 Westbrook Mall
Vancouver, British Columbia
V6S 2L2

Phone: 604-224-4331

Work Description: Routine monitoring fish bioassays. Isolation of toxic fractions in pulp mill effluents.

Tests Used: 96 -h LC50s, acute

Toxicants: Waste-effluents - domestic, mining, pulp and paper, oil refineries and reagents

Organisms: Salmonids, *Daphnia*

Response Parameters: Lethality, avoidance behavior, blood chemistry, physiology

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Name: Morgan, John D 210

E.V.S. Consultants Ltd.
195 Pemberton Avenue
North Vancouver, British Columbia
V7P 2R4

Phone: 604-986-4331

Work Description: Acute and chronic toxicity testing on sediments using marine organisms. Recent work published in Bull. Environ. Contam. Toxicol., NOAA Tech. Memo., Can. Tech. Rep. Fish. Aquat. Sci. 1163.

Tests Used: EC50s, LC50s, partial life cycle, lethal, sublethal

Toxicants: Contaminated sediments, mine tailings

Organisms: Rainbow trout, coho salmon, euphausiids, amphipods, mussels, oysters, other freshwater and marine organisms

Response Parameters: Mortality, larval development/abnormalities, behavior, growth

Name: Morgan, Raymond P. 211

AEL-UMCEES
FSC Campus - Gunter Hall
Frostburg, MD 21532
U.S.A.

Phone: 301-689-3115

Work Description: Effects of treflan on birds, assays of coal contaminants on fish eggs and larvae.

Tests Used: Flow-through, static

Toxicants: Treflan, organics from coal

Organisms: Striped bass, quail, fathead minnow

Response Parameters: Death, growth, development

Name: Moul, David J. 212

Environment Canada
Environmental Protection Service
Aquatic Toxicity Laboratory
1801 Welch Street
North Vancouver, British Columbia
V7P 1B7

Phone: 604-980-6917

Work Description: A service laboratory with clients: EPS, DFO, DIAND, and B.C. provincial departments.

Tests Used: Acute LT50, LC50, static and flow-through, in regular (monitoring) or special (legal) modes

Toxicants: Industrial discharges, chemicals, etc.

Organisms: *Salmo gairdneri, Photobacterium phosphoreum*

Response Parameters: Death

Name: Moulder, David S. 213

Marine Pollution Information Centre
Marine Biological Association, Citadel Hill
Plymouth PL1 2PB
United Kingdom

Phone: PLY 21761

Work Description: Collecting and indexing the literature on marine and estuarine pollution, and providing information services, including a current awareness bulletin Marine Pollution Research Titles, and contract work.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Muir, D.C.C. Dr. 214

Fisheries and Oceans Canada
Freshwater Institute
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5108

Work Description: Studies on environmental fate of priority pollutants and pesticides including uptake, bioconcentration, metabolism by fish and aquatic invertebrates (freshwater).

Tests Used: N/A

Toxicants: Polychlorinated dioxins, triaryl phosphates, pyrethroid insecticides

Organisms: Fish, aquatic invertebrates

Response Parameters: N/A

Name: Nagler, James J. 215

Concordia University
Dept. of Biology
1455 DeMaisonneuve Boul. West
Montréal, Québec
H3G 1M8

Phone: 514-879-2856

Work Description: Examining the effects of sublethal exposure of pentachlorophenol on endogenous and exogenous yolk production in rainbow trout.

Tests Used: Chronic bioassays

Toxicants: Pentachlorophenol, hydrocarbons

Organisms: Rainbow trout (*Salmo gairdneri*)

Response Parameters: Histological presence of abnormal oocyte atresia; serum calcium, serum phosphoprotein phosphorus, hepatosomatic index determinations; reproduction

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Name: Neil, Elizabeth M. 216

Reid Crowther & Partner Ltd.
200-260 West Esplanade
North Vancouver, British Columbia
V7M 3G7

Phone: 604-986-6181

Work Description: Aquatic monitoring program at a northern metal mine.

Tests Used: N/A

Toxicants: Cyanides, heavy metals

Organisms: Benthic macro-invertebrates, fish, lake trout, arctic grayling, cisco, round whitefish

Response Parameters: Community composition, metal concentration in tissue, bioaccumulation

Name: Neville, C.M. Dr. **217**

Ontario Ministry of the Environment
Laboratory Services & Applied Research Branch
P.O. Box 213
Rexdale, Ontario
M9W 5L1

Phone: 416-248-3011

Work Description: Sublethal physiological effects on trout of exposure to acid and aluminum with and without organic acids.

Tests Used: Flow-through, recirculating

Toxicants: pH, aluminum, organic carbon

Organisms: Rainbow trout, lake trout, brook trout

Response Parameters: Ventilation, cough rate, activity, oxygen consumption, arterial blood pH and O_2 saturation, blood ECO^2, lactate, electrolytes, tissue electrolytes, E.M. studies of gill tissues

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Name: Newdick, John **218**

Ontario Veterinary College
Wildlife Disease Section
Pathology Dept.
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Toxic metal monitoring in aquatic mammals. Correlations on heavy metal levels with metallothionein and other detoxifying compounds. Study initiated Fall 1983 - no results yet.

Tests Used: Field collection of carcasses

Toxicants: Cadmium, mercury, aluminum, selenium, copper, zinc, heavy metals

Organisms: River otter (*Lutra canadensis*)

Response Parameters: Residues, detoxifying enzymes, bioaccumulation, biochemistry

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Name: Niimi, Arthur J. **219**

Great Lakes Fisheries Research Branch
Canada Centre for Inland Waters
Burlington, Ontario
L7R 4A6

Phone: 416-637-4269

Work Description: Contaminant dynamics in fish: uptake, retention, and elimination of organic and inorganic environmental contaminants. Influence of physiological and chemical factors that regulate dynamic rates.

Tests Used: Uptake and clearance studies

Toxicants: Various compounds

Organisms: Rainbow trout, various species

Response Parameters: Uptake and clearance rates, bioaccumulation

Name: Nix, Peter 220

E.V.S. Consultants Ltd.
195 Pemberton Avenue
North Vancouver, British Columbia

Phone: 604-986-4331

Work Description: Toxicological investigations of oil sands tailing ponds. Evaluation of marine dredging and disposal operations including effects of underwater blasting on fish.

Tests Used: *In situ*, laboratory, static

Toxicants: Tailing effluents, marine dredging spoils

Organisms: Duckweed, *Gammarus*, trout, *Daphnia*, herring

Response Parameters: Mortality, reproduction

Name: Olafson, R.W. 221

University of Victoria
Dept. of Biochemistry and Microbiology
Victoria, British Columbia
V8W 2Y2

Phone: 604-721-7085

Work Description: Tolerance of heavy metals and hepatic metallothionein in salmonids as an indicator of exposure to metals, sequencing of rainbow trout and coho salmon metallothionein, kinetics of induction, effect of metals on disease resistance.

Tests Used: Acute, chronic, *in situ* exposure

Toxicants: Zinc, copper, cadmium, heavy metals

Organisms: Rainbow trout, coho salmon, chinook salmon

Response Parameters: Hepatic metallothionein concentrations, growth, survival, mitotic index, 35/s cysteine incorporation

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Name: Olla, Bori L. 222

Oregon State University
College of Oceanography
Marine Science Center
Newport, Oregon 97365
U.S.A.

Phone: 503-867-3011

Work Description: Effects of toxicants on behavior and behavioral ecology of marine fish and invertebrates.

Tests Used: Laboratory, field behavioral measures

Toxicants: Petroleum, drilling muds, cadmium, temperature, hydrocarbons, heavy metals

Organisms: Marine fishes, molluscs, crustaceans, polychaetes

Response Parameters: Activity, feeding, burrowing, social behavior, behavior

Name: Ongley, Edwin D. Dr. 223

National Water Research Institute
Environment Canada
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5040

Work Description: Biogeochemical pathways of toxic chemicals in fluvial systems of the Canadian prairies.

Tests Used: Acute

Toxicants: Chemical extracts

Organisms: *Panagrellus redivivus*, nematodes, bacteria

Response Parameters: Development, lethality

Name: Ontario Research Foundation 224

Ontario Research Foundation
Biotechnology and Chemical Engineering Centre
Sheridan Park Research Community
Mississauga, Ontario
L5K 1B3

Phone: 416-822-4111

Work Description: Use of Microtox® bioassays for acute toxicity tests on effluents from biomass to energy programs. Use of Ames *Salmonella* tests for mutagenicity in environmental applications.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Osborne, J.M. 225

Environmental Protection Service
P.O. Box 5037
St. John's, Newfoundland
A1C 5V3

Phone: 709-772-5488

Work Description: Acute testing on various oil-base drilling fluids and cuttings

Tests Used: Acute, static, flow-through

Toxicants: Fresh and saltwater

Organisms: Rainbow trout, stickleback, shrimp

Response Parameters: LT50, LC50 (i.e., lethality)

Name: Ozburn, George W. Dr. 226

Lakehead University
Dept. of Biology
Thunder Bay, Ontario
P7B 5E4

Phone: 807-345-2121

Work Description: Joint action of mixtures of organic toxicants on fish.

Tests Used: 96-h, acute, ELS, bioconcentration, lethal, sublethal

Toxicants: Chlorinated benzenes, chlorinated phenols, hydrocarbons

Organisms: *Jordanella floridae* (American flagfish), *Salvelinus fontinalis* (brook trout)

Response Parameters: Mortality, embryo/larval survival, fry survival and growth, uptake/clearance rates and BCF (whole fish and lipid), reproduction, bioaccumulation

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Name: Parker, W.R. 227

Environment Canada
Environmental Protection Service
3rd Floor, Queen Square
45 Alderney Drive
Dartmouth, Nova Scotia
B2Y 2N6

Phone: 902-426-3287

Work Description: Acute lethality of industrial effluents to rainbow trout, acute lethality of thiocyanate to rainbow trout, acute lethality of oil-based drilling muds to threespine stickleback.

Tests Used: Static, flow-through, freshwater, seawater

Toxicants: Industrial effluents, drilling muds, thiocyanate

Organisms: Rainbow trout, *Daphnia magna*, *Daphnia pulex*, threespine stickleback, green sea urchins, blue mussels, *Macoma balthica*

Response Parameters: Lethality, bioaccumulation, sublethal effects

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Name: Parsons, T.R. 228

University of British Columbia
Dept. of Oceanography
Vancouver, British Columbia
V6T 1W5

Phone: 604-228-4273

Work Description: Sixty primary publications, many related to marine pollution and the ecology of the environment, plus two textbooks.

Tests Used: Ecological - controlled ecosystems

Toxicants: Oil, metals, eutrophication

Organisms: Food chain

Response Parameters: Food chain, bioaccumulation

Name: Pazdernik, LeRoy J.

229

Univ. du Québec a Trois-Rivières
Dept. Chimie - Biologie
C.P. 500
Trois-Rivières, Québec
G9A 5H7

Phone: 819-376-5673

Work Description: Distribution and speciation of heavy metals and trace elements in the environment (rivers, biota and sediments) and their effects on the biota.

Tests Used: Mortality, LD50, acute

Toxicants: Heavy metals, trace elements

Organisms: *Bithynia tentaculata, Gammarus fasciatus*

Response Parameters: Bioaccumulation, mortality, LC50

Name: Pearce, John B.

230

Chief, Div. of Environmental Assessment
National Marine Fisheries Service
Northeast Fisheries Center
Sandy Hook Lab
Highlands, NJ 07732
U.S.A.

Phone: 201-872-0200

Work Description: Long-term monitoring and research concerned with laboratory and field effects of toxic inorganic and organic contaminants. Monitoring emphasizes biological effects.

Tests Used: N/A

Toxicants: PCBs, PAH, trace metals, hydrocarbons

Organisms: Benthic invertebrates, demersal fish, ichthyoplankton, phytoplankton

Response Parameters: Changes in community structure, behavior, chromosomal aberrations, sublethal and lethal physiology and biochemistry, genetics

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Name: Penrose, W.

231

Argonne National Lab
ER-203
Argonne, IL 60439
U.S.A.

Phone: 312-972-4262

Work Description: Control of bioavailability of radionuclides and organic compounds by humic acids in water. Nature of humic acid interactions.

Tests Used: N/A

Toxicants: Humic acid

Organisms: Natural phytoplankton assemblages

Response Parameters: Uptake and transformation

Name: Persoone, G. 232

State University of Ghent
Lab of Biological Research in Aquatic Pollution
J. Plateaustraat 22, B-9000 Ghent
Belgium

Phone: 32-91-257571

Work Description: Methodology and standardization of freshwater and marine bioassays. Controlled production of cryptobiotic stages of test species as alternatives to stock-keeping.

Tests Used: N/A

Toxicants: Various compounds

Organisms: *Artemia, Daphnia, Brachionus*

Response Parameters: Mortality, growth, reproduction, recovery

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Name: Peters, M.K. 233

Hardy Associates (1978) Ltd.
4810-93 Street
P.O. Box 746
Edmonton, Alberta
T5J 2L4

Phone: 403-436-2152

Work Description: Analytical chemistry (organic and inorganic), pesticides, herbicides, human health, seepage and subsurface movement of contaminants, hazardous wastes.

Tests Used: Analytical chemistry, microbiology

Toxicants: Pesticides, herbicides

Organisms: N/A

Response Parameters: N/A

Name: Peterson, Spencer A. 234

EPA, Corvallis Environmental Research Laboratory
200 S.W. 35th Street
Corvallis, OR 97333
U.S.A.

Phone: 503-757-4794

Work Description Comparative toxicology of multi-trophic level, multi-media organismal responses to leachates from environmental samples and their relationship to field findings.

Tests Used: Acute, lethal, sublethal

Toxicants: Soil, water

Organisms: Soil microbes, earthworm, root elongation, algal assay, *Daphnia*, fathead minnows

Response Parameters: LC50, LD50, nerve transmission rates, physiology

Name: Petrocelli, S.R. 235

Bionomics Aquatic Toxicology Laboratory
790 Main Street
Wareham, MA 02571
U.S.A.

Phone: 617-295-2550

Work Description: Laboratory and field studies of the effects of organic and inorganic chemicals on aquatic organisms, environmental hazard evaluation, field verification of laboratory toxicity testing data, onsite bioassays.

Tests Used: Acute, chronic, embryo-larval, bioconcentration

Toxicants: Pesticides, organic and inorganic industrial chemicals

Organisms: Fathead minnow, sheepshead minnow, mysid, penaeid shrimp, bivalves, water flea, midge, trout, bluegill, catfish

Response Parameters: Mortality, fecundity, growth and development, shell deposition, reproduction

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Name: Pfeifer, Keith F. 236

Allied Corporation
Dept. of Toxicology
P.O. Box 1021R
Morristown, New Jersey 07960
U.S.A.

Phone: 201-455-2260

Work Description: General environmental hazard assessment, environmental fate (adsorption, biodegradation) and effects (microbial, aquatic toxicity tests).

Tests Used: N/A

Toxicants: Industrial chemicals

Organisms: Microbes (activated sludge and soil), freshwater fish, invertebrates

Response Parameters: Microbial metabolism (CO_2 evolution or O_2 consumption), lethality and no observed effect concentrations, physiology

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Name: Phipps, Gary L. 237

Environmental Research Laboratory
6201 Congdon Blvd.
Duluth, MN 55804
U.S.A.

Phone: 218-727-6692

Work Description: Comparative toxicology and structure activity testing. "Acute Toxicity of Phenol and Substituted Phenols to the Fathead Minnow," Bull. Environ. Contam. Toxicol.(1981).

Tests Used: Flow-through, acute, chronic

Toxicants: Organics, metals

Organisms: Fathead minnow, trout, salmon, channel catfish, bluegills, goldfish, crayfish, snails, midge

Response Parameters: Lethal, chronic sublethal, behavior, histology

Name: Pierce, Ronald C. Dr. 238

Environmental Secretariat
National Research Council of Canada
100 Sussex Drive
Ottawa, Ontario
K1A 0R6

Phone: 613-996-6542

Work Description: Development of scientific criteria for environmental pollutants, water-pollution chemistry, environmental dynamics and ecotoxicology of water pollutants.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Pilli, Anne 239

Montana State University
Fisheries Bioassay Laboratory
Bozeman, MT 59717
U.S.A.

Phone:

Work Description: Toxicity tests on aquatic organisms, computerized toxicity data bases.

Tests Used: Acute, life cycle

Toxicants: Complex effluents

Organisms: *Daphnia*

Response Parameters: Acute and sublethal effects, various responses

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Name: Pinel Alloul, Bernadette 240

Université de Montréal
Dept. de Sciences Biologiques
C.P. 6128
Montréal, Québec
H3C 3J7

Phone: 514-343-6792

Work Description: Assessment of lethal toxicity of heavy metals to indigenous crustaceans of lakes in Quebec. Toxicity of sediment associated contaminants to planktonic organisms.

Tests Used: Acute

Toxicants: Heavy metals, sediments

Organisms: Crustaceans, phytoplankton

Response Parameters: Primary productivity, mortality

Name: Polet, Mark 241

Gulf Canada Resources Inc.
P.O. Box 130
Calgary, Alberta
T3E 1Z4

Phone: 403-233-3922

Work Description: Toxicity of drilling fluids and solids.

Tests Used: LC50, EC50, acute

Toxicants: Ammonia, hydrocarbons, organic compounds

Organisms: Trout (*Salmo gairdneri*), microtox

Response Parameters: Lethality

Name: Popham, David J. 242

SEAKEM Oceanography Ltd.
P.O. Box 2219
Sidney, British Columbia
V8L 3S1

Phone: 604-656-0881

Work Description: Use of mussels (*M. edulis*) as indicators of estuarine pollution, biochemical composition of oysters, histopathology of mussels.

Tests Used: N/A

Toxicants: PAH, PCB, DDT

Organisms: Molluscs, mussels, oysters

Response Parameters: Body burdens, bioaccumulation

Name: Prasad, Raj. Dr. 243

Forest Pest Management Institute
Dept. of Environment
P.O. Box 490
Sault Ste. Marie, Ontario
P6A 5M7

Phone: 705-949-9461

Work Description: Impact of pesticides and adjuvants on macrophytes.

Tests Used: Phytotoxicity

Toxicants: Pesticides

Organisms: *Leamna minor, Salvinia natans*

Response Parameters: Colony growth, relative rate of growth, frond multiplication, leaf growth, growth, reproduction

Name: Pulak, R. 244

Bioquest International Inc.
7 Loyola Bay
Winnipeg, Manitoba
R3T 3J7

Phone:

Work Description: Ames testing. Toxicity testing using a free-living nematode *Panagrellus redivivus*. Testing of pure chemicals, mixtures of chemicals, urea formaldehyde, environmental samples (sediment, fish tissues).

Tests Used: Ames testing, sublethal, mutagenesis

Toxicants: Various compounds

Organisms: *Panagrellus redivivus*, salmonella

Response Parameters: Genotoxicity/mutagenesis, developmental inhibition, mortality

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Name: Qadri, S.U. Dr. 245

University of Ottawa
Dept. of Biology
Ottawa, Ontario
K1N 6N5

Phone: 613-231-4235

Work Description: Uptake and elimination of pesticides and metals from fish and invertebrates.

Tests Used: LC50, EC50, acute

Toxicants: Arsenic, mirex, matacil, insecticides

Organisms: Fish, amphipods

Response Parameters: Bioconcentration, bioaccumulation, depuration

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Name: Ralph, Karen M. 246

Canada Centre for Inland Waters
Great Lakes Fisheries Research Branch
P.O. Box 5050
Burlington, Ontario
L7R 4A6

Phone: 519-637-4507

Work Description: Finishing work on copper and cadmium complexation. Beginning work on sublethal toxicant effects on growth rates, feedings rates and food conversion efficiency in young fish.

Tests Used: LC50, static, sublethal, lethal

Toxicants: Cu, Cd, PCP, 2-4 dichlorophenol, heavy metals, hydrocarbons

Organisms: *Daphnia* sp., rotifers, copepodites, juvenile freshwater fish (post alevin stage)

Response Parameters: Death, feeding rates, growth rates, food conversion efficiency

Name: **Ramamoorthy, S. Dr.**

247

Alberta Environmental Centre
Head, Limnology Section
Vegreville, Alberta
T0B 4L0

Phone: 403-632-6761

Work Description: Identification and quantitation of fate processes in aquatic toxicity testing of chemicals. Effect of competing compartments in the uptake of toxic metals by fish.

Tests Used: Lethal, sublethal

Toxicants: Lindane, mercury, cadmium, zinc, industrial effluents, heavy metals

Organisms: N/A

Response Parameters: Behavioral changes, pathological changes and induction at synthesis of metal-binding proteins, behavior

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Name: **Rand, Gary G.**

248

FMC Corporation
P.O. Box 8
Princeton, NJ 08540
U.S.A.

Phone: 609-452-2300

Work Description: Toxicologist, engaged in all aspects of toxicology, aquatic and mammalian. This includes research and directing research.

Tests Used: Acute, chronic

Toxicants: Pesticides

Organisms: Freshwater species

Response Parameters: Mortality, reproductive behavior, reproduction

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Name: **Rao, Salem S. Dr.**

249

National Water Research Institute
Canada Centre for Inland Waters
867 Lakeshore Road
Burlington, Ontario
L7R 4A6

Phone: 416-637-4312

Work Description: Microbiological studies of lakes receiving acid precipitation in Canada. Interested in acid effects on microbial populations, organic degradation, physiology.

Tests Used: Acute, chronic, sublethal

Toxicants: Acid rain, heavy metals

Organisms: Mixed lake bacterial populations

Response Parameters: N/A

Name: Raymond, Pierre **250**

1035 Des Chataigniers
Trois-Rivières, Québec
G8Y 2J8

Phone: 819-375-5580

Work Description: Study of sublethal toxicity of cyanide on fish, (with G. Leduc, Concordia University, Montreal).

Tests Used: Sublethal, 20-day exposure

Toxicants: Cyanide

Organisms: Rainbow trout (*Salmo gairdneri*)

Response Parameters: Plasma thiocyanate levels, liver cytochrome oxydase and glycogen, biochemistry

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Name: Reed, Mark **251**

Applied Science Associates, Inc.
Wakefield, RI 02879
U.S.A.

Phone: 401-789-4268

Work Description: Numerical modelling of pollutant impacts in the marine environment.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Reid, Bruce J. **252**

195 Pemberton Avenue
North Vancouver, British Columbia
V6T 1B5

Phone: 604-986-4331

Work Description: Literature reviews on effects of sewage effluent (acute, chronic), bioaccumulation of metals (Cd, Pb, Hg) from contaminated sediments.

Tests Used: 96-h LC50, LT50, bioaccumulation, acute

Toxicants: Sediments, metals, organics

Organisms: Rainbow trout, arctic char, arctic grayling, coho salmon, clams (*Macoma balthica*), mussels (*Mytilus edulis*), polychaete worms

Response Parameters: Acute toxicity, bioaccumulation, egg hatchability, reproduction

Name: **Renzoni, Aristeo** 253

Dipartimento Biologia Ambientale
Via Delle Cerchia 3
53100 Siena, Italy

Phone: 288428

Work Description: Levels of persistent contaminants in tissues, organs, eggs of fish-eating birds, resident and migratory of the Mediterranean area. The influence upon reproductive success, enzymatic activities, immunological resistance, other biological parameters.

Tests Used: N/A

Toxicants: DDT, DDE, PCBs, trace metals

Organisms: Birds, cormorants, pelicans, Cory's shearwater, sea gull, greebe

Response Parameters: Metallothioneine, enzymes

Name: **Ribo, Juan M.** 254

Environmental Contaminants Division
National Water Research Institute
Burlington, Ontario
L7R 4A6

Phone:

Work Description: Toxicity of organic chemicals to aquatic environment, microtox toxicity test evaluation, quantitative structure-activity relationships.

Tests Used: Microtox test, acute

Toxicants: Single chemicals, organics

Organisms: *Photobacterium phosphoreum* (bioluminescent bacteria)

Response Parameters: Light reduction, physiology

Name: **Rice, Stanley D.** 255

Auke Bay Laboratory
NMFS
P.O. Box 155
Auke Bay, Alaska 99821
U.S.A.

Phone: 907-789-7231

Work Description: Basic toxicology tests - mostly long-term, primarily with growth, larvae, juveniles, both fish and crustaceans. Oil is primary toxicant.

Tests Used: Flow-through, 96-h, 40-day, acute, chronic

Toxicants: Petroleum, drilling muds, temperature, oiled sediments, hydrocarbons

Organisms: Fish, crustaceans, larvae

Response Parameters: Survival, growth, molting, scope for growth

Name: Roch, Michael **256**

University of Victoria
Dept. of Biochemistry and Microbiology
Victoria, British Columbia
V8W 2Y2

Phone: 604-721-7077

Work Description: Kinetics of metabolism of metallothionein in rainbow trout, induction of metallothionein by metal mixtures, use of metallothionein as indicator of contamination, determination of safe concentrations for salmonids exposed to metal mixtures.

Tests Used: Sublethal, developmental, lethal

Toxicants: Zn, Cu, Cd, heavy metals

Organisms: Rainbow trout, coho salmon, chinook salmon

Response Parameters: Survival, growth, mitotic activity, hepatic metallothionein concentrations, biochemistry, genetics

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Name: Roff, John C. Dr. **257**

University of Guelph
Dept. of Zoology
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Photosensitivity and photoresponse of planktonic crustacea as an indicator of sublethal heavy metal effects.

Tests Used: Sublethal, behavioral

Toxicants: Heavy metals, pH

Organisms: Crustacea, zooplankton

Response Parameters: Light response

Name: Ross, Philippe Dr. **258**

Université de Montréal
Dept. de Sciences biologiques
C.P. 6128, Succursale A
Montréal, Québec
H3C 3J7

Phone: 514-343-7691

Work Description: Chemical analysis of St. Lawrence River sediments and elutriates, phytoplankton and zooplankton bioassays of elutriates; Goals: development of mapping and bioassay techniques.

Tests Used: Standard elutriate test, plankton bioassays

Toxicants: IJC metal mixture, sediment elutriates, heavy metals

Organisms: Phytoplankton: *Selenastrum capricornutum*, natural community; Zooplankton: *Daphnia magna, Chydorus sphaericus, Euchlanis* sp.

Response Parameters: Inhibition of photosynthesis, ATP shifts, mortality, swimming behavior

Name: **Roy, Robert J.J.** 259

University of Western Ontario
Dept. of Zoology
London, Ontario
N6A 5B7

Phone: 519-679-6102

Work Description: Determining effect of lake pH on reproductive physiology of brook trout, *Salvelinus fontinalis*, in Ontario.

Tests Used: N/A

Toxicants: pH

Organisms: Brook trout, *Salvelinus fontinalis*

Response Parameters: Oocyte development, yolk deposition in ova, plasma estrogen levels, sperm production, ovarian steroid synthesis, reproduction

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Name: **Rudd, J.W.M. Dr.** 260

Freshwater Institute
Fisheries and Oceans
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5240

Work Description: Effects of acid deposition on rates of mercury methylation and demethylation. Effects of acid deposition on rates of organic matter decomposition. Alkalinity production by nitrate and sulfate reducing bacteria.

Tests Used: Whole lake experiments, *in situ* enclosure experiments, laboratory sediment inhibition system

Toxicants: Acid deposition, metals

Organisms: Aquatic bacteria

Response Parameters: Rates of activity of bacterial nitrate and sulfate reducers, organic matter decomposers and mercury methylation/demethylation, biodegradation

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Name: **Ryder, R.A.** 261

Ontario Ministry of Natural Resources
P.O. Box 2089
Thunder Bay, Ontario
P7B 5E7

Phone: 807-683-6231

Work Description: Chairman, Task Force on Indicators of Ecosystem Quality (IJC) -Provide a concept for use of indicator - integrator organisms on the Great Lakes.

Tests Used: N/A

Toxicants: N/A

Organisms: Lake trout, *Pontoporeia hoyi*, walleye, *Hexagenia limbata*, Forster's tern

Response Parameters: Ecosystem and community responses

Name: **Samoiloff, Martin R.** **262**

University of Manitoba
Dept. of Zoology
Winnipeg, Manitoba
R3T 2N2

Phone: 204-474-9821

Work Description: Bioassays and risk priorization of environmental samples.

Tests Used: Mutagenic, lethality

Toxicants: Chemicals, environmental samples

Organisms: *Panagrellus redivivus, Ophryotrocha labronica*

Response Parameters: Survival, development, gene action, mutagenesis, physiology

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Name: **Saroglia, Marco G.** **263**

ENEL-CRTN
via Rubattino 54
20100 Milano
Italy

Phone: 02-88473063

Work Description: Ecotoxicity of chlorine, nitrite, gas oversaturation, organo-tin compounds, thermal shock and toxicity toward aquatic organisms, in particular fish. Effect of toxics on fish pathology, recovery of fish after intoxication and clinical symptoms.

Tests Used: Acute, chronic, physiology

Toxicants: Complex effluents

Organisms: Sea bass, gray mullet, brine shrimp, panaeid shrimp, marine copepods, rotifers

Response Parameters: Mortality, total hemoglobin drop, methemoglobinemia, bubbles formation, avoidance, swimming performances, behavior, physiology, pathology

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Name: **Sastry, Akella Dr.** **264**

Graduate School of Oceanography
University of Rhode Island
Kingston, Rhode Island 02881
U.S.A.

Phone: 401-792-6671

Work Description: MFO enzyme system as a pollution monitoring tool.

Tests Used: N/A

Toxicants: Oil contaminated sediments

Organisms: *Mytilus edulis*

Response Parameters: Biochemical

Name: Scherer, Eberhard Dr. 265

Freshwater Institute
Dept. of Fisheries and Oceans
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5004

Work Description: Toxicity testing methodology. Research to define sublethal, particularly behavioral effects of environmental pollutants on fish and aquatic invertebrates using field and lab approaches (e.g., stream channels).

Tests Used: Sublethal, single species, multispecies

Toxicants: Various compounds

Organisms: *Coregonus clupeaformis, Salmo gairdneri, Salvelinus fontinalis, Salvelinus alpinus, Mytilus edulis, Acroneuria* sp., *Paragnetina* sp.

Response Parameters: Locomotor activity, swimming performance, preference/avoidance, feeding, intra- and interspecific interactions, behavior

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Name: Schom, C. Dr. 266

Atlantic Salmon Research Institute
P.O. Box 429
St. Andrews, New Brunswick
E0G 2X0

Phone: 506-529-8995

Work Description: Genetic control of acid resistance in Atlantic salmon, *Salmo salar*

Tests Used: 7-day acute trials using low pH

Toxicants: N/A

Organisms: Salmo salar

Response Parameters: Morphology, histology, survival time, lethality, genetic analysis

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Name: Schuldt, A.A. 267

Stelco Inc.
P.O. Box 2030
Hamilton, Ontario
L8N 3T1

Phone: 416-528-2511

Work Description: Process water quality control, process monitoring.

Tests Used: Acute, sublethal, static, flow-through

Toxicants: Process water, heavy metals, organics

Organisms: Trout, *Daphnia*, American flagfish, perch, *Gammarus*, snails, fish eggs

Response Parameters: Reproduction, hatching success, avoidance, taste, mortality, bioaccumulation, behavior

Name: Schwartz, Jack P. **268**

Auke Bay Laboratory
P.O. Box 155
Auke Bay, Alaska 99821
U.S.A.

Phone: 907-789-7231

Work Description: Metabolic responses to pollutants, energetic and physiological effects.

Tests Used: Chronic, sublethal, exposure and recovery

Toxicants: Crude oil, selected hydrocarbons

Organisms: Marine invertebrates, teleosts

Response Parameters: Metabolic responses, feeding, growth

Name: Scott, D.P. Dr. **269**

Freshwater Institute
Fisheries and Oceans
501 University Cres.
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5111

Work Description: Research on statistics of environmentally induced contamination of Atlantic and Greenland cod, Greenland halibut, spotted wolffish and Gulf of St. Lawrence waters. All papers are internal ICES documents.

Tests Used: N/A

Toxicants: Hg, As, Cd, Se, Cu, Zn, PCBs, X-HCH, HCB, DDT-complex, metals, hydrocarbons

Organisms: Marine fish

Response Parameters: Various organ concentrations or burdens, bioaccumulation

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Name: Segal, Lawrence M. **270**

Environmental Protection Service
Environment Canada
9942-108 Street
Suite 804
Edmonton, Alberta
T5K 2J5

Phone:

Work Description: During FY 84/85, I will be active in a project dealing with the evaluation of landfill leachate toxicity, using the Microtox method.

Tests Used: Microtox system, acute

Toxicants: Landfill leachates

Organisms: Microtox bacteria

Response Parameters: Inhibition of photoluminescence

Name: Seidner, Read T. 271

Waterworks Laboratory - 35
City of Calgary
P.O. Box 2100
Calgary, Alberta
T2P 2M5

Phone: 403-243-9808

Work Description: Continuous monitoring of surface water quality, monitoring disinfection efficacy.

Tests Used: N/A

Toxicants: N/A

Organisms: Fish, bacteria

Response Parameters: N/A

Name: Servos, Mark R. 272

624-77 University Cres.
Winnipeg, Manitoba
R3T 3N8

Phone: 204-261-1264

Work Description: The effect of short-term pH depressions during snowmelt.

Tests Used: Field tests using artificial and natural streams

Toxicants: pH, metals

Organisms: Mollusca (*Amnicola limosa*), *Pisidium equilaterale*, *Eliptio companulatum*

Response Parameters: Survival, growth, reproduction, bioconcentration

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Name: Seyfried, Patricia L. 273

University of Toronto
Dept. of Microbiology
Fitzgerald Building
Toronto, Ontario
M5S 1A8

Phone: 416-978-3732

Work Description: Study of the effect of metals from mine tailings on the microflora of a marsh treatment system.

Tests Used: Agar plate method, resazurin reduction method, ATP bioassay, acute

Toxicants: Heavy metals

Organisms: Aquatic bacteria

Response Parameters: Microscopic counts

Name: **Showell, M.S.** 274

University of Guelph
Dept. of Zoology
Guelph, Ontario
NIG 2W1

Phone: 519-824-4120

Work Description: Mercury, cadmium and lead in Bay of Fundy food chain, with special reference to marine mammals, seabirds, and suspended sediment.

Tests Used: Monitoring in field

Toxicants: Mercury, cadmium, lead, heavy metals

Organisms: Marine mammals, seabirds

Response Parameters: Residue levels, bioaccumulation

Name: **Slinger, S.** 275

University of Guelph
Dept. of Nutrition
Guelph, Ontario

Phone: 519-824-4120

Work Description: Toxicity of oxidized fats for rainbow trout, toxicity of waterborne and dietary selenium and copper in rainbow trout.

Tests Used: Sublethal, physiological

Toxicants: Oxidized oils, trace minerals

Organisms: Rainbow trout, shrimp (*Macrobrachium rosenbegii*)

Response Parameters: Growth, feed efficiency, enzyme assays, ascorbic acid content of liver and head, kidney (Mineral studies), TBA tests in fat, trace mineral in tissue

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Name: **Sloterdijk, H.** 276

Environment Canada
1001 Pierre Dupuy
Longueuil, Quebec

Phone: 514-283-3916

Work Description: Toxic chemicals in the St. Lawrence River, ambient levels monitoring in fish and sediments, toxicity testing using elutriates and ATP measurements in fish.

Tests Used: Sublethal

Toxicants: Elutriate of sediments

Organisms: Rainbow trout, Microtox

Response Parameters: ATP, luminescence

Name: Smith, Ian R.

277

University of Guelph
Dept. of Pathology
Ontario Veterinary College
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Investigate the responses of fish to mutagenic and carcinogenic chemicals, concentrating in embryos.

Tests Used: Static

Toxicants: Mutagens, carcinogens

Organisms: *Brachydanio rerio*

Response Parameters: Chromosome abnormalities, tumors, cancer, carcinogenecity

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Name: Solbé, John F. de L.G.

278

Water Research Centre
Medmenham Laboratory
Henley Road
P.O. Box 16
Marlow
Buckinghamshire SL7 2HD U.K.

Phone: 049-166-531

Work Description: Research and commercial toxicology on freshwater fish, invertebrates and algae. Methodology of tests using young life-stages of fish. Tagging and tracking of salmon for deriving estuarine standards.

Tests Used: Acute, chronic, lethal, sublethal, fundamental biochemistry

Toxicants: Freshwater toxicants

Organisms: Salmonid fish, non-salmonid fish, *Daphnia*, algae

Response Parameters: Death, growth, survival, bioaccumulation, behavior, other sublethal responses

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Name: Solomon, K.R.

279

Canadian Centre for Toxicology
645 Gordon Street
Guelph, Ontario
N1Y 2W1

Phone: 519-837-3320

Work Description: Evaluation of the effects of pesticides in aquatic and terrestrial systems.

Tests Used: Ecosystem, mesocosm

Toxicants: Pesticides

Organisms: Various organisms

Response Parameters: Numbers, growth, development, interactions of responses, persistence, residues.

Name: Speyer, Menno R. 280

Noranda Research Centre
240 Hymus Blvd.
Pointe-Claire, Quebec
H9R 1G5

Phone: 514-697-6640

Work Description: Toxicity tests - CNO, CNS, hardness, pH, temperature. Water quality criteria - review of North American water quality objectives.

Tests Used: Trout, static

Toxicants: CNO, CNS, cyanides

Organisms: Rainbow trout

Response Parameters: LC50, lethality

Name: Sprague, John B. 281

University of Guelph
Dept. of Zoology
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Modifying factors of toxicants, toxicity of mixtures, avoidance responses.

Tests Used: Acute lethality, short-cut chronic tests using behavior

Toxicants: Metals

Organisms: Flagfish, rainbow trout, fathead minnows

Response Parameters: Lethality, reproduction, uptake, avoidance, bioconcentration, behavior

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Name: Spry, Douglas 282

McMaster University
Dept. of Biology
Hamilton, Ontario

Phone:

Work Description: Effects of zinc on acid-base ions and blood gases of trout, uptake and depuration of zinc.

Tests Used: Acute, physiological

Toxicants: Zinc, heavy metals

Organisms: *Salmo gairdneri*

Response Parameters: Blood chemistry, uptake and depuration, physiology, bioaccumulation

Name: **Stegeman, John J.** **283**

Woods Hole Oceanographic Institution
Woods Hole, MA 02543
U.S.A.

Phone: 617-548-1400

Work Description: Biochemistry of biotransformation enzymes, characterization of forms, functions and regulation of cytochrome P-450 isozymes in fish.

Tests Used: Biochemical

Toxicants: Petroleum hydrocarbons

Organisms: Teleost fish

Response Parameters: Induction and catalytic functions of cytochrome P-450, biochemistry

---

Name: **Stephenson, Gladys L.** **284**

University of Guelph
Dept. of Environmental Biology
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Impact assessment of pesticides using limnocorrals, N.K. Kaushik, G.L. Stephenson, K. Solomon and K. Day, 1984, "Evaluation of the Impact of Permethrin on Zooplankton Communities Using Limnocorrals", *Can. J. Fish. & Aquatic Sciences* - submitted.

Tests Used: N/A

Toxicants: Permethrin, atrazine, methoxychlor, diuron, pesticides

Organisms: Zooplankton, phytoplankton

Response Parameters: Density, diversity, filtering rates, mortality, productivity, species interactions, behavior

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Name: **Stephenson, Malcolm** **285**

University of Guelph
Dept. of Zoology
P.O. Box 49
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Environmental toxicology of heavy metals (Cd, Pb, Zn, Al) and possible role of benthic macroinvertebrates in mobilizing same (directly or via body burdens) in acidifying systems.

Tests Used: N/A

Toxicants: Heavy metals

Organisms: *Hyalella azteca*, *Pisidium* spp., *Amnicola limosa*, *Hexagenia* spp., *Dromogomphus* spp.

Response Parameters: Metabolism of metals, biochemistry

Name: Stokes, P.M., Dr. **286**

Director
University of Toronto
Institute for Environmental Studies
Toronto, Ontario
M5S 1A4

Phone: 416-978-6526

Work Description: Metal bioaccumulation in aquatic biota in relation to acidification: field and lab studies.

Tests Used: Uptake

Toxicants: Hg, Cd, Pb, Mn, Al

Organisms: Algae, amphipods, fish, otter, mink

Response Parameters: Kinetics of direct uptake, food chain transfer

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Name: Strachan, William M. **287**

Canada Centre for Inland Waters
P.O. Box 5050
Burlington, Ontario
L7R 4A6

Phone: 416-637-4222

Work Description: Examination of toxic substances distribution models, organic substances in rain, physical chemical properties of toxic substances.

Tests Used: N/A

Toxicants: Organic compounds, PCBs

Organisms: N/A

Response Parameters: N/A

Name: Stubblefield, W.A. Dr. **288**

Research and Environmental, Health Div.
Exxon Corporation
P.O. Box 235
East Millstone, New Jersey 08873
U.S.A.

Phone: 201-873-6052

Work Description: Consultant to business and technical groups within the corporation providing advice on the toxic hazards associated with the use and development of company products and processes.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Sundaram, K.M.S. Dr. 289

Head, Toxic Chemicals
Forest Pest Management Institute
Environment Canada - Forestry Service
1219 Queen St., E., P.O. Box 490
Sault Ste. Marie, Ontario
P6A 5M7

Phone: 705-949-9461

Work Description: AChE poisoning of nontarget species following aerial application of pest control chemicals in forestry situations.

Tests Used: Enzyme inhibition

Toxicants: Fenitrothion, aminocarb, pesticides

Organisms: Fish, crayfish, birds

Response Parameters: Brain AChE inhibition, biochemistry

Name: Suns, K. 290

Ministry of the Environment
P.O. Box 213
Rexdale, Ontario
M9W 5L1

Phone: 416-248-3011

Work Description: Nearshore fish contaminants surveillance - Great Lakes, metal bioavailability in acidified Ontario lakes.

Tests Used: N/A

Toxicants: Contaminants, metals

Organisms: Fish

Response Parameters: Bioaccumulation

Name: Surgeoner, Gord Dr. 291

University of Guelph
Dept. of Env. Biology
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Evaluation of simulated stream systems to determine impact of fenitrothion and aminocarb on aquatic organisms.

Tests Used: N/A

Toxicants: Organophosphorus, carbamate, BTI insecticides

Organisms: Blackflies, mosquitoes

Response Parameters: N/A

Name: Taylor, Margaret C. Dr. **292**

Environment Canada
Place Vincent Massey
Ottawa, Ontario
K1A 0E7

Phone: 819-997-1920

Work Description: Production of Guidelines for Surface Water Quality, Vol. I, Inorganic Chemical Substances, Vol. 2, Organic Chemical Substances.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Thomas, Peter **293**

University of Texas
Marine Science Institute
Port Aransas, Texas 78373
U.S.A.

Phone: 512-749-6768

Work Description: Protective effects of glutathione and ascorbic acid on pollutant induced cellular damage, reproductive toxicology especially steroidogenesis.

Tests Used: Sublethal, reproductive

Toxicants: All types, various compounds

Organisms: Marine fish

Response Parameters: Biochemical, particularly Phase II detoxification mechanisms, lipid peroxidation, endocrine changes

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Name: Thomas, Robert E. **294**

Chico State University
Dept. of Biological Science
Chico, CA 95929
U.S.A.

Phone: 916-895-5113

Work Description: Physiological responses of marine fish to sublethal exposures to petroleum hydrocarbons and temperature extremes.

Tests Used: N/A

Toxicants: Aromatic hydrocarbons, temperature

Organisms: Pink salmon, coho salmon, dolly varden, char

Response Parameters: Respiration, metabolism, enzyme activity, physiology, biochemistry

Name: Thurberg, F. Dr.

295

National Marine Fisheries Service
Milford Laboratory
Milford, Connecticut 06460
U.S.A.

Phone: 203-783-4244

Work Description: Sublethal physiological effects.

Tests Used: Acute, sublethal

Toxicants: Metals, mercury, cadmium, silver, copper

Organisms: Lobsters, bivalve molluscs, flounders

Response Parameters: Oxygen consumption, osmoregulation, fish hematology, physiology

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Name: Thurston, Robert V.

296

Montana State University
Fisheries Bioassay Laboratory
111 Lewis
Bozeman, MT 59717
U.S.A.

Phone: 406-994-3371

Work Description: Comparative toxicity of organics, toxicity of ammonia and nitrite, toxicity of cyanide and related compounds.

Tests Used: Acute, chronic, flow-through, static

Toxicants: Ammonia, nitrite, cyanide

Organisms: Rainbow trout, various warm water fish, *Daphnia magna, Tanytarsus dissimilis*

Response Parameters: Death, bioaccumulation

Name: Townsend, Don

297

Washburn and Gillis Associates Ltd.
70 York Street
Fredericton, New Brunswick
E3B 3N5

Phone: 506-454-0213

Work Description: Investigation of sublethal pH effects on behavior and growth of stream fishes. Toxicity tests of sublethal effects of heavy metals.

Tests Used: Sublethal, chronic

Toxicants: Acidic pH, copper, heavy metals

Organisms: Freshwater fish, Atlantic salmon, blacknose dace, slimy sculpins

Response Parameters: Growth, behavior

Name: Trevors, Jack T., Dr. 298

University of Guelph
Dept. of Environmental Biology
Guelph, Ontario
N1G 2W1

Phone: 519-824-4120

Work Description: Effects of metals and environmental pollutants on microbial processes in sediment. Plasmid-encoded resistance to metals in aquatic and sediment bacteria. Plasmid-encoded biodegradation of environmental pollutants.

Tests Used: Determination of maximum concentrations of metals tolerated by bacteria. Agarose gel electrophoresis to isolate plasmid DNA encoding for resistance.

Toxicants: Metals, solvents, pesticides, hydrocarbons

Organisms: *Pseudomonads*, *Flavobacterium*, bacterial isolates from soil, sediment, sludge and water exposed to pollutants.

Response Parameters: Growth inhibition of plasmid-containing and plasmid-cured derivative organisms.

Name: Trottier, Bertin 299

Université de Moncton
Dept. de Chimie et de Biochimie
Moncton, New Brunswick
E1A 3E9

Phone: 506-858-4361

Work Description: Assessment of physiological stress to rainbow trout using ATP measurements.

Tests Used: LC50, white muscle ATP levels, acute

Toxicants: Industrial effluents, pulp and paper effluents, chemical dyes

Organisms: Rainbow trout

Response Parameters: White muscle ATP level, biochemistry

Name: Uthe, John F. 300

Fisheries and Environmental Sciences
Dept. of Fisheries and Oceans
Halifax Fisheries Research Laboratory
P.O. Box 550
Halifax, Nova Scotia
B3J 2S7

Phone: 902-426-6277

Work Description: Investigation of the presence of chemical contaminants in fish and fishery products, study of trends in chemical contamination levels in fish populations.

Tests Used: N/A

Toxicants: Trace metals and organics

Organisms: Shellfish

Response Parameters: Residue levels and trends, bioaccumulation

Name: Van Aggelen, Graham **301**

Environment Canada
Environmental Protection Service
Aquatic Toxicity Laboratory
1801 Welch Street
North Vancouver, British Columbia
V7P 1B7

Phone: 604-980-6917

Work Description: A service laboratory with clients: EPS, DFO, DIAND, and B.C. provincial departments.

Tests Used: Acute, LT50, LC50, static, flow-through, routine testing, legal testing

Toxicants: Industrial discharges, industrial chemicals

Organisms: *Salmo gairdneri*, *Photobacterium phosphoreum*

Response Parameters: Death

Name: Van Coillie, Raymond **302**

ECO-Research Inc.
(Subsidiary of C.I.L.)
121 Hymus Blvd.
Pointe-Claire, Montreal
H9R 1E6

Phone: 514-697-3273

Work Description: Ecotoxicology of heavy metals, acid precipitation and some pesticides.

Tests Used: Sublethal

Toxicants: Heavy metals, pesticides

Organisms: Trout, salmon, algae, daphnids, *Artemia*

Response Parameters: Growth, fluorescence, and ATP for algae; mobility for daphnids; avoidance and swimming capacity, respirometry, biochemistry, and gills for fishes

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Name: Vandermeulen, John H. **303**

Bedford Institute of Oceanography
Marine Ecology Laboratory
Dartmouth, Nova Scotia
B2Y 4A2

Phone: 902-426-2479

Work Description: Uptake and bioconversions of heavy metals and petroleum hydrocarbons by marine organisms, including bivalves, fish, phytoplankton. Toxicology and mutagenicity of petroleum hydrocarbons.

Tests Used: Ames tests, phytoplankton motility

Toxicants: Heavy metals, petroleum hydrocarbons

Organisms: Various organisms

Response Parameters: Uptake, metabolism, mutagenicity, bioaccumulation

Name: Vaughan, David J. **304**

Environmental Protection Service
3rd Floor, Queen Square
45 Alderney Drive
Dartmouth, Nova Scotia
B2Y 2N6

Phone: 902-426-3284

Work Description: Acute toxicity tests on a variety of industrial effluents (ongoing monitoring). Drilling mud and component tests.

Tests Used: Acute, static

Toxicants: Industrial effluents, drilling muds

Organisms: Rainbow trout, threespine stickleback, *Daphnia*

Response Parameters: Lethality, morbidity, equilibrium loss, behavior

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Name: Vezeau, Raymond **305**

1001 Pierre-Dupuy
Longueuil, Quebec
J4K 1A1

Phone: 514-651-6860

Work Description: N/A

Tests Used: Short-term lethal, sublethal

Toxicants: Industrial wastes

Organisms: Fish, algae, bacteria

Response Parameters: Mortality, growth inhibition, luminescence inhibition, ATP cell, biochemistry

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Name: Vigers, Gary A. **306**

EVS Consultants
195 Pemberton Avenue
North Vancouver, British Columbia
V7P 2R4

Phone: 604-986-4331

Work Description: Vigers G.A. et al., "Toxicological, Biophysical, and Chemical Assessment of Red Dog Creek, De Long Mountains, Alaska (1983), Alaska Dept. of Environmental Conservation.

Tests Used: Lethal, acute, chronic

Toxicants: Mine tailings, acid mine drainage

Organisms: Euphausiid (*E. pacifica*), mussel larvae (*M. edulis*), coho smolts (*O. kisutch*), amphipods (*R. abronius*), arctic char (*S. alpinus*), arctic grayling

Response Parameters: Acute and chronic lethality, larval development

Name: Wager, Wayne C. 307

Ontario Ministry of the Environment
Northwest Region
P.O. Box 5000
435 South James Street
Thunder Bay, Ontario
P7C 5G6

Phone: 807-475-1315

Work Description: Compliance testing of industrial effluents for Federal and Provincial regulations.

Tests Used: Acute, 96-h static

Toxicants: Industrial effluents

Organisms: Rainbow trout

Response Parameters: Mortality, LC50

Name: Waite, Don 308

Environment Canada
EPS
241-1901 Victoria Avenue
Regina, Saskatchewan

Phone: 306-359-6438

Work Description: Movement, concentration of agricultural biocides.

Tests Used: N/A

Toxicants: N/A

Organisms: Various organisms

Response Parameters: N/A

Name: Waiwood, Brenda A. 309

Biological Station
St. Andrews, New Brunswick
E0G 2X0

Phone: 506-529-3107

Work Description: Short-term physiological tests with fish and invertebrates, and various compounds or conditions.

Tests Used: Sublethal, 96-h acute

Toxicants: Anoxia, low pH, pesticides, chlorinated compounds

Organisms: Salmon, flounder, sea raven, clams, mussels, annelid worms (*Nereis*)

Response Parameters: Adenylate nucleotides, phosphate compounds, glucose, glycogen levels, AEC, biochemistry

Name: Waller, D.H. Dr. **310**

Technical University of Nova Scotia
P.O. Box 1000
Halifax, Nova Scotia
B3J 2X4

Phone: 902-429-8300

Work Description: Investigations of the effects of urban runoff or surface runoff in urbanizing areas on lakewater quality.

Tests Used: N/A

Toxicants: Trace metals in water and sediment

Organisms: N/A

Response Parameters: N/A

Name: Watts, Ron G. **311**

Environment Canada
Environmental Protection Service
Aquatic Toxicity Laboratory
1801 Welch Street
North Vancouver, British Columbia
V7P 1B7

Phone: 604-980-6917

Work Description: A service laboratory with clients: EPS, DFO, DIAND, and B.C. provincial departments.

Tests Used: Acute, LT50, LC50, static, flow-through, routine testing, legal testing

Toxicants: Industrial discharges, industrial chemicals

Organisms: *Salmo gairdneri*, *Photobacterium phosphoreum*

Response Parameters: Death

Name: Webster, G.R. Barrie **312**

University of Manitoba
Pesticide Research Laboratory
Dept. of Soil Science
Winnipeg, Manitoba
R3T 2N2

Phone: 204-474-8153

Work Description: Environmental chemistry of organic contaminants, e.g., dioxins, pesticides (insecticides, herbicides, fungicides, etc.) in artificial (laboratory and outdoor) aquatic systems.

Tests Used: Bioassay, chemical analysis

Toxicants: Chlorodioxins and furans, pesticides (insecticides, herbicides, fungicides, etc.)

Organisms: Fathead minnows, rainbow trout, mosquitoes, snails, duckweed, rooted aquatic vegetation, whole ecosystem

Response Parameters: Biomass, bioaccumulation, bioconcentration, depuration, metabolism, excretion, degradation, lethality.

Name: Weinberger, Pearl Dr. 313

University of Ottawa
Dept. of Biology
Ottawa, Ontario
K1N 6N5

Phone: 613-231-2334

Work Description: Interactions between aquatic and terrestrial phytobiota, sediments, and commonly used pesticides, herbicides and surfactants; laboratory and field studies.

Tests Used: Biochemical bioassays

Toxicants: Pesticides, herbicides, solvents and surfactants

Organisms: Microphytes and macrophytes

Response Parameters: Physiological, biochemical (metabolic) and life cycle events

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Name: Weis, Judith S. 314

Rutgers University
Dept. of Zoology
Newark, New Jersey 07102
U.S.A.

Phone: 201-648-5019

Work Description: Effects of pollutants on development and growth, investigating possible adaptation/acclimation in chronically polluted areas, (*Mar. Biol.* 65:283-288).

Tests Used: Teratological, growth, chronic

Toxicants: Heavy metals

Organisms: *Fundulus heteroclitus*, *Uca* sp.

Response Parameters: Growth, development

Name: Wells, Peter G. 315

Toxic Chemicals Management Program
Environment Canada
Ottawa, Ontario
K1A 1C8

Phone: 819-997-3190

Work Description: Acute and chronic toxicology of oil spill control agents in coastal waters. Use of marine zooplankton as test organisms in basic and applied aquatic toxicology. Short-term toxicity tests with aquatic invertebrates.

Tests Used: 1-4 day lethal, sublethal, acute

Toxicants: Crude oils, dispersants, hydrocarbons

Organisms: *Artemia*, marine copepods, *Homarus*, decapod crustacean larvae

Response Parameters: Lethality, behavior, development, growth

Name: **White, Alan W.** 316

Dept. of Fisheries and Oceans
Biological Station
St. Andrews, New Brunswick
E0G 2X0

Phone: 506-529-8854

Work Description: Fate and consequences of dinoflagellate toxins in marine food web. Toxigenisis in the Red-Tide Dinoflagellate Gonyaulax.

Tests Used: N/A

Toxicants: Gonyaulax toxins, natural toxins

Organisms: Fish, zooplankton, shellfish

Response Parameters: Loss of equilibrium, paralysis, death, behavior

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Name: **White, Harris H.** 317

National Oceanic & Atmospheric Admin.
N/OMS33-Room 652
Rockwall Building
Rockville, MD 20852
U.S.A.

Phone: 301-443-8493

Work Description: Development of environmental assessment strategies for use in management decisions.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: **Whittle, D.M.** 318

Canada Centre for Inland Waters
Dept. of Fisheries and Oceans
Great Lakes Fisheries Research Branch
867 Lakeshore Road
Burlington, Ontario
L7R 4A6

Phone: 416-637-4567

Work Description: Ecosystem contaminants monitoring.

Tests Used: Bioaccumulation, ecosystem responses

Toxicants: Organic compounds, trace metals

Organisms: Zooplankton, benthic invertebrates, forage and top predator fish species

Response Parameters: Contaminant burdens, bioaccumulation

Name: Wilson, Robert C.H. **319**

Institute for Ocean Sciences
P.O. Box 6000
Sidney, B.C.
V8L 4B2

Phone: 604-656-8211

Work Description: Marine effluent toxicity, toxicity of metals and organics in sediment, hydrocarbon toxicity.

Tests Used: User of toxicity information.

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Wofford, Wayne **320**

University of Texas
Marine Science Institute - Port Aransas
Port Aransas, Texas 78373
U.S.A.

Phone: 512-749-6797

Work Description: Interaction xenobiotics with glutathione and metallothionein, effects of xenobiotics on glutathione metabolism, lipid peroxidation, reproductive toxicology.

Tests Used: Sublethal, reproductive

Toxicants: Cd, Hg, BaP, oil, heavy metals, hydrocarbons

Organisms: Mullet (*Mugil cephalus*), Croaker (*Micropogonius undulatus*)

Response Parameters: Glutathione, ascorbic acid, metal binding proteins, lipid peroxidation, glutathione peroxidase, biochemical changes.

Name: Wong, B. **321**

3411-108 Street
Edmonton, Alberta
T6J 1B3

Phone: 403-420-2588

Work Description: Industrial dossiers work.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Wong, Michael P. **322**

Canadian Wildlife Service
National Wildlife Research Centre
Environmental Conservation Service
Environment Canada
Ottawa, Ontario
K1A 0E7

Phone: 819-997-1410

Work Description: Assessment of the potential hazards of pesticides on the wildlife of Canada. Direct toxic and habitat modification effects. Effects of hydrocarbons on ion regulatory processes in rainbow trout.

Tests Used: Acute, chronic, lethal, sublethal

Toxicants: Pesticides, petroleum hydrocarbons, polynuclear aromatic hydrocarbons

Organisms: Fish, invertebrates, waterfowl, rainbow trout

Response Parameters: Mortality, growth, tissue distribution/excretion, blood ions, cortisol, gill ATP, physiology, biochemistry

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Name: Wong, Paul T.S. **323**

Fisheries and Oceans
Great Lakes Fisheries Research Branch
Canada Centre for Inland Waters
Burlington, Ontario
L7R 4A6

Phone: 416-637-4210

Work Description: Structure - toxicity of chlorobenzenes on phytoplankton. Methylation and toxicity of lead and tin compounds. Ultra-clean techniques in metal effects on phytoplankton.

Tests Used: Lethal, sublethal

Toxicants: Chlorobenzenes, lead, alkyllead, metals

Organisms: Phytoplankton, algae, micro-organisms

Response Parameters: Growth, primary production, morphology, enzymes, biochemistry

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Name: Wren, Christopher D. **324**

University of Toronto
Institute for Environmental Studies
Toronto, Ontario
M5S 1A4

Phone:

Work Description: Transfer of metals through aquatic ecosystems, and effect of acidification on metal cycling and uptake. Currently examining metal uptake by piscivorous furbearing mammals.

Tests Used: N/A

Toxicants: Metals

Orgznisms: N/A

Response Parameters: N/A

Name: **Wright, Phil B.** 325

P.O. Box 2242
Parksville, British Columbia
V0R 2S0

Phone: 604-248-2998

Work Description: Gas supersaturation, effects on salmon fry.

Tests Used: N/A

Toxicants: N/A

Organisms: Chinook Salmon

Response Parameters: N/A

Name: **Yoo, J.Y.** 326

Environment Canada
Canadian Forest Service
Forest Pest Management Institute
P.O. Box 490
Saulte Ste. Marie, Ontario
P6A 5M7

Phone: 705-949-9461

Work Description: Herbicide residues analysis in environmental sample bases.

Tests Used: N/A

Toxicants: Herbicides

Organisms: N/A

Response Parameters: N/A

Name: **Zeeman, Maurice G.** 327

FDA, CVM, HFV-152
Food and Drug Administration
Dept. of Health and Human Services
5600 Fishers Lane
Rockville, MD 20857
U.S.A.

Phone: 301-443-1880

Work Description: Review aquatic toxicology protocols, evaluate scientific studies on variety of aquatic toxicology testing. Conduct aquatic toxicology research and teach NIH Course in Environmental Toxicology.

Tests Used: EC50, LC50, fish ventilation rates, fish hematology and immunology and microcosms

Toxicants: Heavy metals

Organisms: Rainbow trout, fathead minnows, bluegill, *Daphnia*, Mysid shrimp, *Selenastrum*

Response Parameters: Lethality, sublethal effects, bioaccumulation and ecosystem level effects (microcosms).

Name: Zitko, V. Dr.

328

Biological Station
St. Andrews, New Brunswick
E0G 2X0

Phone: 506-529-8854

Work Description: Aquatic toxicology of persistent organic compounds, environmental chemistry of new synthetic compounds.

Tests Used: N/A

Toxicants: Organic compounds

Organisms: N/A

Response Parameters: N/A

Name:

Phone:

Work Description:

Tests Used:

Toxicants:

Organisms:

Response Parameters:

Name:

Phone:

Work Description:

Tests Used:

Toxicants:

Organisms:

Response Parameters:

NEW ENTRIES

The following records were received too late for indexing in the first edition of the directory. They are presented in alphabetical order by name. These entries will be indexed in the next edition.

INSCRIPTIONS NOUVELLES

Les inscriptions suivantes n'ont pas été reçues à temps pour leurs insertions dans la première édition du répertoire. Elles apparaissent selon leur nom en ordre alphabétique et seront répertoriées dans la prochaine édition.

Name: Allison, Elliott, W. 329

Environmental Studies
Agriculture Canada - PFRA
Motherwell Bldg. - 1901 Victoria Ave.
Regina, Saskatchewan
S4P 0R5

Phone: 306-359-6670

Work Description: Environmental impact assessment, water use assessment, interpretation and application of water use criteria, development and interpretation of water quality objectives and management strategies.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Belliveau, Paul, E. Dr. 330

Water Quality Branch
Environment Canada
P.O. Box 861
Moncton, New Brunswick
E1C 8N6

Phone: 506-388-6606

Work Description: Regional Head, Guidelines and Agreements Division. Development of water quality objectives. Formation of water quality guidelines.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Borgmann, Uwe 331

Great Lakes Fisheries Research Branch
Fisheries and Oceans Canada
P.O. Box 5050
Burlington, Ontario
L7R 4A6

Phone: 416-637-4559

Work Description: Toxicant effects on food webs and fish production, ecosystem bioenergetics.

Tests Used: Sublethel, microcosms

Toxicants: Metals, selected organisms

Organisms: *Daphnia*, zooplankton, larval fish, phytoplankton

Response Parameters: Growth, feeding rates, conversion efficiency, biomass, production

Name: Chang, Philip, S.S. 332

Freshwater Institute
Fisheries and Oceans Canada
501 University Crescent
Winnipeg, Manitoba
R3T 2N6

Phone: 204-949-5243

Work Description: To identify and examine physiological responses of invertebrates to acids and metals which may be related to their disappearance from fresh waters undergoing acidification.

Tests Used:

Toxicants: Acid, Hg, Cd, Se and Al

Organisms: Crayfish, zooplankton

Response Parameters: Ca^{++} uptake by crayfish; zooplankton population responses

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Name: Dunn, Gary, W. 333

Prairie Provinces Water Board
306-1901 Victoria Avenue
Regina, Saskatchewan
S4P 3R4

Phone: 306-522-6671

Work Description: Developing water quality objectives on interprovincial streams for the protection of downstream use.

Tests Used: N/A

Toxicants: N/A

Organisms: N/A

Response Parameters: N/A

Name: Dupont, Normand, Dr. 334

Direction des Relevés aquatiques
Environnement Québec
3900 rue Marly
Sainte-Foy, Québec
G1X 4E4

Phone: 418-644-3291

Work Description: Water quality network, quality criteria, sampling methods.

Tests Used: *Daphnia* bioassay, fertility potential

Toxicants: Natural water

Organisms: *Daphnia*, algae (*Selenastrum*)

Response Parameters: Bioaccumulation, EC50

Name: Fitchko, Jerry 335

IEC Beak Consultants Ltd.
6870 Goreway Drive
Mississauga, Ontario
L4V 1P1

Phone: 416-671-2600

Work Description: Synthesis of effects of persistent toxics on the health of aquatic biota, particularly in the Great Lakes.

Tests Used: Biomonitoring

Toxicants: Heavy metals, persistent toxic organics, radionuclides

Organisms: Aquatic community (especially benthic) and species populations

Response Parameters: Structural and functional (physiological, behavioral, genetic)

Name: Flynn, Edward, J. 336

Department of Biological Sciences
City College of New York
Convent Avenue
New York, NY 10031
U.S.A.

Phone: 212-690-8450

Work Description: Investigating physiological responses of marine invertebrates to chronic, sublethal concentrations of petroleum hydrocarbons

Tests Used: Lethal, sublethal, static bioassays, LD50, EC50

Toxicants: Benzene, DMN

Organisms: Juveniles of *Callinectes sapidus, Carcinus maenas.*

Response Parameters: Survival, growth studies including limb regeneration, molting, osmotic and ionic regulation, nutrient storage analysis

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Name: Hargesheimer, Erika, E. 337

City of Calgary
Glenmore Waterworks Laboratory (35)
P.O. Box 2100
Calgary, Alberta
T2P 2M5

Phone: 403-243-0073

Work Description: Trace analysis and quantitation of inorganic (metals) and organic compounds; use of ozone in drinking water treatment; identification of organic compounds produced by ozonation.

Tests Used: Gas chromatography, mass spectrometry, atomic absorption.

Toxicants: Pesticides, trihalomethanes, industrial organic compounds, heavy metals.

Organisms: N/A

Response Parameters: N/A

Name: Horvath, Steve, H. 338

Environmental Laboratory
3650 Wesbrook Mall
Vancouver, British Columbia
V6S 2C2

Phone: 604-228-9766

Work Description: Toxicity of pure chemicals and complex effluents to aquatic environment.

Tests Used: Acute, chronic, Microtox®, multi-species

Toxicants: Industrial, mining, municipal effluents, pure chemicals

Organisms: Bacteria (Microtox®), *Daphnia*, trout

Response Parameters: Bioluminescence, acute mortality, chronic tests, survival, growth, reproduction

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Name: Lewis, Carrie, M. 339

City of Calgary
Glenmore Waterworks Laboratory (35)
P.O. Box 2100
Calgary, Alberta
T2P 2M5

Phone: 403-243-0073

Work Description: Identification, speciation and monitoring of aquatic organisms of interest in drinking water treatment processes. Mutagenicity of extracts of chlorine and ozone treated drinking waters.

Tests Used: Microbiological procedures, Ames mutagenicity

Toxicants: Chlorine, ozone

Organisms: Aquatic bacteria, phytoplankton, invertebrates, parasites

Response Parameters: Lethality, injury, mutagenicity

Name: Morgan, Eric, L. 340

Box 5187
Tennessee Tech. University
Cookeville, TN 38505
U.S.A.

Phone: 615-528-3134

Work Description: Automated multiple species biomonitoring. Episodic-fluctuating stress bioassay. Time-until-response-death bioassay.

Tests Used: Real time acid rain biomonitoring

Toxicants: Aluminum, manganese, H^+, etc.

Organisms: Fish, invertebrates (mollusc, mayfly nymph, etc.)

Response Parameters: Change in heart and breathing rates in fish, mollusc and mayfly nymphs

Name: Orr, Donald, E. 341

Lakehead University
Department of Chemistry
Thunder Bay, Ontario
P7B 5E1

Phone: 807-345-2121

Work Description: GC analysis of water and fish tissue for aquatic toxicity studies of multiple, organic, chlorinated compounds.

Tests Used: Acute, chronic, bioaccumulation

Toxicants: Chlorinated benzenes, phenols, ethylenes, ethanes, and their mixtures

Organisms: American flagfish, brook trout

Response Parameters: N/A

Name: Smith, Alasdair, D. 342

Lakehead University
Department of Biology
Thunder Bay, Ontario
P7B 5E1

Phone: 807-345-2121

Work Description: 1. Aquatic toxicity studies of multiple, organic, chlorinated compounds. 2. Regulatory testing of industrial effluents.

Tests Used: 1. Flow-through 96-h acute, ELS chronic, bioconcentration, 2. Static 96-h acute

Toxicants: 1. Chlorinated benzenes, phenols, ethylenes, ethanes, and their mixtures, 2. Industrial effluents

Organisms: 1. American flagfish, brook trout, 2. rainbow trout

Response Parameters: 1. Lethality, embryo/larval survival, fry survival and growth, uptake/clearance rates and BCF (whole fish and lipid), QSAR, 2. LC50.

Name: Stober, Quentin, J. 343

University of Washington
Fisheries Research Institute WH-10
Seattle, Washington 98195
U.S.A.

Phone: 206-543-9041

Work Description: Toxicology of effluents, receiving waters and contaminated sediments in marine, estuarine and fresh waters.

Tests Used: Sperm, embryo, invertebrates and fish, acute, static, flow-through bioassays

Toxicants: Metals, organics, pesticides, sewage, chlorine, sediments, elutriates

Organisms: Sea urchins, sand dollars, oysters, mussels, crabs, shrimp, larval and adult marine fish, salmon, amphipods

Response Parameters: Mortality, embryo development, egg fertilization success, behavior

Name: Swanson, Stella, M. 344

Saskatchewan Research Council
30 Campus Drive
Saskatoon, Saskatchewan
S7N 0X1

Phone: 306-664-8174

Work Description: Measure selected blood parameters in wild fish with elevated uranium-series radionuclides and compare to fish in control lakes.

Tests Used: Fish measurements; wild populations; chronic sub-lethal exposure

Toxicants: Elevated field concentrations of uranium, radium-226 and lead-210

Organisms: *Ccregonus clupeaformis* (lake whitefish), *Salvelinus namaycush* (lake trout), *Catostomus commersoni* (white sucker)

Response Parameters: Red blood cell count, total protein, packed cell volume, white blood cell count and differential

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Name: Ullah, Wasi, Dr. 345

Department of Environment
Elizabeth Towers, Elizabeth Avenue,
P.O. Box 4750,
St. John's, Newfoundland
A1C 5T7

Phone: 709-737-2563

Work Description: For water resources management, monitoring of domestic surface and groundwater quality, waste site leachates control of siltation from construction; other pollution.

Tests Used: Legal sampling, *in situ* measurements

Toxicants: Heavy metals, organics, suspended solids, creosote, major ions

Organisms: N/A

Response Parameters: N/A

Name: Watson, Andrew, E.P., Dr. 346

International Joint Commission
Great Lakes Regional Office
100 Ouellette Avenue - 8th floor
Windsor, Ontario
N9A 6T3

Phone: 514-256-7821

Work Description: Water and ecosystem quality, development of objectives for ecosystem quality for the IJC Great Lakes Science Advisory Board.

Tests Used: N/A

Toxicants: Organic and inorganic chemicals

Organisms: Freshwater organisms

Response Parameters: N/A

SURVEY SHEET EXPLANATION

The following sheet has been attached to facilitate preparation of the second edition of the Directory.

If you are conducting work in the area of aquatic toxicology and general water pollution assessment, including environmental chemistry, and are not represented in this document, of if your current entry needs updating or modification to better describe your activities, please complete the following self-addressed form and return it at your earliest convenience.

The index has been computerized and is maintained by "non-toxicologists" unfamiliar with our terminology. Therefore, we insist that a few rules be followed so that your submission will be included in the next edition of the directory.

1. Entries should be **TYPED** to guarantee proper transcription of technical terms. The accuracy of your published record depends upon the readability of your submission.

2. The database system used to manage the directory limits the number of characters which can be entered under each information heading. The space available is noted in brackets beside the heading name; longer submissions will simply be truncated.

3. The information provided for "Types of Toxicity Tests", "Toxicants", "Organisms" and "Response Parameters" should be in the form of brief key words or key word phrases separated by commas. These key words are used to form the final indexes. As a guide, refer to the key words used in the indexes of this edition of the directory. Use the best words which accurately describe your current work, and longer term interests.

CANADIAN DIRECTORY OF AQUATIC TOXICOLOGISTS AND RELATED SPECIALISTS
SECOND EDITION SURVEY, 1985

PLEASE TYPE ENTRY*

* Read accompanying explanation sheet prior to completion of form to ensure inclusion of your record in the next edition.

Date of Submission: ..../............/........
(day) (month) (year)

Name: (max. 25 characters) ....
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Toxicants or Tested Conditions: (max. 130 char.) ....
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Organisms: (max. 150 char.) ....
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Response Parameters (max. 150 char.) ....
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Dr. P.G. Wells
Toxic Chemicals Management Program
Environmental Protection Service
Environment Canada
Ottawa, Ontario
K1A 1C8

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EXPLICATION CONCERNANT LE QUESTIONNAIRE

Les instructions qui suivent sont destinées à faciliter la préparation de la deuxième édition du Répertoire.

Si vous travaillez dans le domaine de l'évaluation de la toxicité du milieu aquatique et de la pollution de l'eau en général, y compris en chimie de l'environnement, et que vous ne figurez pas dans la première édition, ou si vous désirez faire mettre à jour ou modifier les informations à votre sujet de façon à présenter une meilleure description de vos activités, veuillez remplir le questionnaire qui suit et le retourner le plus tôt possible.

L'index est informatisé et est mis à jour par des "non-toxicologues" peu familiers avec notre terminologie. Par conséquent, il importe que vous suiviez les quelques règles suivantes afin d'être inscrit dans la prochaine édition du Répertoire.

1. Les renseignements fournis devraient être **DACTYLOGRAPHIÉS** pour assurer une transcription exacte des termes techniques. À cette fin, il faut que l'information que vous fournissez soit lisible.

2. Le système de base de données employé limite le nombre de caractères pour chaque rubrique. L'espace disponible est indiqué entre parenthèses à côté du titre de la rubrique; l'information trop longue sera tout simplement coupée.

3. L'information fournie aux rubriques "Types d'essais de toxicité", "Substances toxiques ou conditions étudiées", "Organismes" et "Paramètres mesurés" devrait être présentée sous forme de mots clés ou de phrases clés, séparés par des virgules. Ces mots clés serviront à constituer les index. Pour vous guider, consultez les mots clés employés dans les index de la présente édition du Répertoire.

RÉPERTOIRE CANADIEN DES TOXICOLOGUES DU MILIEU AQUATIQUE ET DES SPÉCIALISTES DE DISCIPLINES CONNEXES

QUESTIONNAIRE POUR LA DEUXIÈME ÉDITION, 1985

PRIÈRE DE DACTYLOGRAPHIER*

* Il est important que vous lisiez la feuille d'explication fournie avant de remplir le questionnaire si vous voulez figurer dans la prochaine édition.

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chimiques toxiques
Service de la protection de l'environnement
Environnement Canada
Ottawa, Ontario
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RÉPERTOIRE CANADIEN DES TOXICOLOGUES DU MILIEU AQUATIQUE ET DES SPÉCIALISTES DE DISCIPLINES CONNEXES

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RÉPERTOIRE CANADIEN DES TOXICOLOGUES DU MILIEU AQUATIQUE ET DES SPÉCIALISTES DE DISCIPLINES CONNEXES

QUESTIONNAIRE POUR LA DEUXIÈME ÉDITION, 1985

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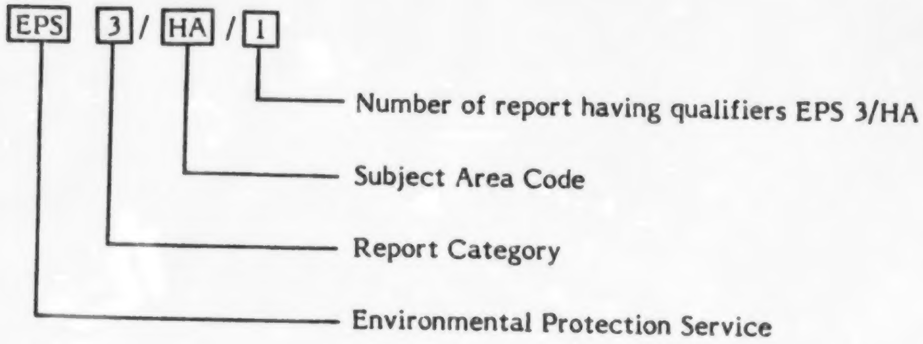
ENVIRONMENTAL PROTECTION SERVICE REPORT SERIES

Sample Number:


EPS
3
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HA
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1
Number of report having qualifiers EPS 3/HA
Subject Area Code
Report Category
Environmental Protection Service

Categories

1	Regulations/Guidelines/Codes of Practice
2	Public Consultation: Problem Assessment, Control Options
3	Research and Technology Development
4	Literature Reviews
5	Surveys
6	Social, Economic and Environmental Impact Assessments
7	Surveillance
8	Policy Proposals & Statements
9	Manuals

Subject Areas

AG	Agriculture
AP	Airborne Pollutants
CC	Commercial Chemicals
CP	Consumer Pollution
FP	Food Processing
HA	Hazardous Wastes
IC	Inorganic Chemicals
MA	Marine Pollution
MM	Mining & Mineral Processing
NR	Northern Regions
PF	Paper and Fibres
PG	Power Generation
PN	Petroleum and Natural Gas
SP	Oil & Chemical Spills
SRM	Standard Reference Methods
TS	Transportation Systems
UP	Urban Pollution

New subject areas and codes are introduced as they become necessary. A list of EPS reports may be obtained from the Publications Section, Environmental Protection Service, Environment Canada, Ottawa, Ontario, Canada, K1A 1C8.

RAPPORTS DU SERVICE DE LA PROTECTION DE L'ENVIRONNEMENT

Exemple de numérotage:

SPE 3/HA/1

1 — Numéro de rapport portant l'identification SPE 3/HA
HA — Code de sujet
3 — Catégorie de rapport
SPE — Service de la protection de l'environnement

Catégories

1	Règlements/Lignes directrices/ Codes de procédure
2	Consultation publique: évaluation des problèmes, options de contrôle
3	Recherche et développement technologique
4	Revues de la documentation
5	Relevés
6	Évaluations des impacts sur l'environnement
7	Surveillance
8	Propositions, analyses et énoncés de principes généraux
9	Guides

Sujets

AG	Agriculture
AP	Polluants atmosphériques
CC	Produits chimiques commerciaux
CP	Pollution - consommateurs
FP	Traitement des aliments
HA	Déchets dangereux
IC	Chimie inorganique
MA	Pollution marine
MM	Exploitation minière et traitement des minéraux
NR	Régions du Nord
PF	Papier et fibres
PG	Production de l'électricité
PN	Pétrole et gaz naturel
SP	Déversements de pétrole et de produits chimiques
SRM	Méthode de référence normalisée
TS	Systèmes de transport
UP	Pollution urbaine

Sujets et codes additionels sont introduits au besoin. Une liste de rapports du SPE peut être obtenue en s'adressant à la Section des publications, Service de la protection de l'environnement, Environnement Canada, Ottawa (Ontario) K1A 1C8.